MEPS HC 239A:
2022 Prescribed Medicines

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Agency for Healthcare Research and Quality
Center for Financing, Access, and Cost Trends
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A. Data Use Agreement

Individual identifiers have been removed from the micro-data contained in these files. Nevertheless, under Sections 308 (d) and 903 (c) of the Public Health Service Act (42 U.S.C. 242m and 42 U.S.C. 299 a-1), data collected by the Agency for Healthcare Research and Quality (AHRQ) and/or the National Center for Health Statistics (NCHS) may not be used for any purpose other than for the purpose for which they were supplied; any effort to determine the identity of any reported cases is prohibited by law.

Therefore in accordance with the above referenced Federal Statute, it is understood that:

1. No one is to use the data in this dataset in any way except for statistical reporting and analysis; and

2. If the identity of any person or establishment should be discovered inadvertently, then (a) no use will be made of this knowledge, (b) the Director Office of Management AHRQ will be advised of this incident, (c) the information that would identify any individual or establishment will be safeguarded or destroyed, as requested by AHRQ, and (d) no one else will be informed of the discovered identity; and

3. No one will attempt to link this dataset with individually identifiable records from any datasets other than the Medical Expenditure Panel Survey or the National Health Interview Survey. Furthermore, linkage of the Medical Expenditure Panel Survey and the National Health Interview Survey may not occur outside the AHRQ Data Center, NCHS Research Data Center (RDC) or the U.S. Census RDC network.

By using these data you signify your agreement to comply with the above stated statutorily based requirements with the knowledge that deliberately making a false statement in any matter within the jurisdiction of any department or agency of the Federal Government violates Title 18 part 1 Chapter 47 Section 1001 and is punishable by a fine of up to $10,000 or up to 5 years in prison.

The Agency for Healthcare Research and Quality requests that users cite AHRQ and the Medical Expenditure Panel Survey as the data source in any publications or research based upon these data.

B. Background

1.0 Household Component

The Medical Expenditure Panel Survey (MEPS) provides nationally representative estimates of health care use, expenditures, sources of payment, and health insurance coverage for the U.S. civilian noninstitutionalized population. The MEPS Household Component (HC) also provides estimates of respondents' health status, demographic and socio-economic characteristics, employment, access to care, and satisfaction with care. Estimates can be produced for individuals, families, and selected population subgroups. The panel design of the survey includes five rounds of interviews covering 2 full calendar years. Additional rounds were added to Panel 24 in 2021 and 2022, covering the third and fourth years respectively, to compensate for the smaller number of completed interviews in later panels. These extra rounds provide data for examining person-level changes in selected variables such as expenditures, health insurance coverage, and health status. Information about each household member is collected through computer-assisted personal interviewing (CAPI) technology, and the survey builds on this information from interview to interview. All data for a sampled household are reported by a single household respondent.

The MEPS HC was initiated in 1996. Each year a new panel of sample households is selected. Because the data collected are comparable to those from earlier medical expenditure surveys conducted in 1977 and 1987, it is possible to analyze long-term trends. Historically, each annual MEPS HC sample consists of approximately up to 15,000 households. Data can be analyzed at the person, the family, or the event level. Data must be weighted to produce national estimates.

The set of households selected for each panel of the MEPS HC is a subsample of households participating in the previous year's National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics (NCHS). The NHIS sampling frame provides a nationally representative sample of the U.S. civilian noninstitutionalized population. In 2006, the NCHS implemented a new sample design for the NHIS, to include households with Asian persons in addition to households with Black and Hispanic persons in the oversampling of minority populations. In 2016, NCHS introduced another sample design that discontinued the oversampling of these minority groups.

2.0 Medical Provider Component

When the household CAPI interview is completed and permission is obtained from the sample members to contact their medical provider(s), a sample of these providers is contacted by telephone to obtain information that household respondents cannot accurately provide. This part of the MEPS is called the Medical Provider Component (MPC), and it collects information on dates of visits, diagnosis and procedure codes, and charges and payments. The Pharmacy Component (PC), a subcomponent of the MPC, does not collect data on charges or on diagnosis and procedure codes, but it does collect detailed information on drugs, including the National Drug Code (NDC) and medicine name, as well as amounts of payment. The MPC is not designed

to yield national estimates. It is primarily used as an imputation source to supplement/replace household reported expenditure information.

3.0 Survey Management and Data Collection

MEPS HC and MPC data are collected under the authority of the Public Health Service Act. The MEPS HC data are collected under contract with Westat, Inc., and the MEPS MPC data are collected under contract with Research Triangle Institute. Datasets and summary statistics are edited and published in accordance with the confidentiality provisions of the Public Health Service Act and the Privacy Act. The NCHS provides consultation and technical assistance.

As soon as the MEPS data are collected and edited, they are released to the public in stages of microdata files and tables via the MEPS website and datatools.ahrq.gov.

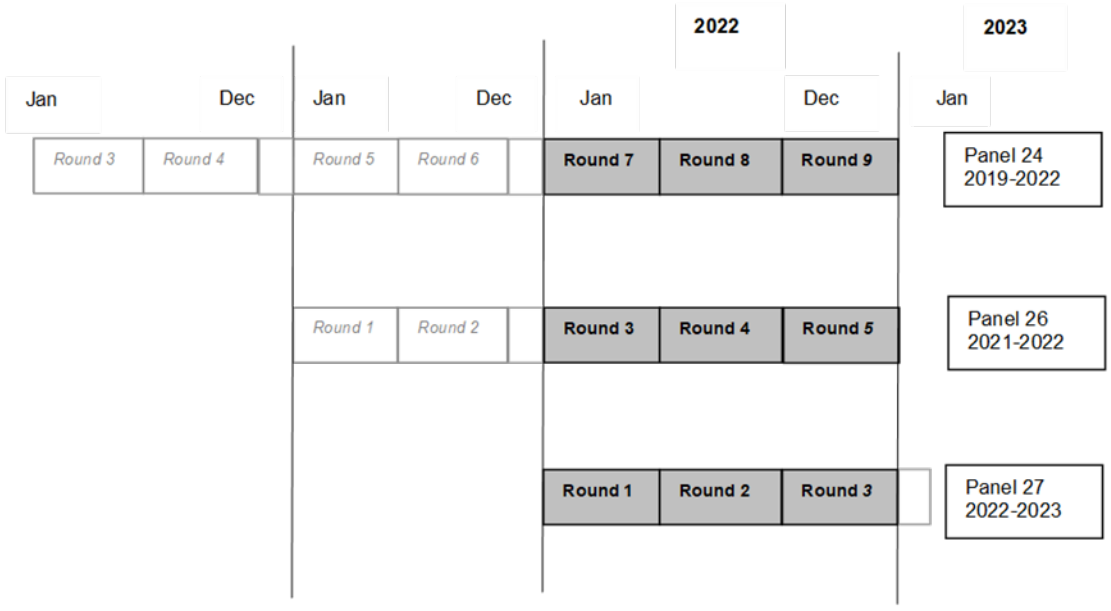
Additional information on MEPS is available from the MEPS project manager or the MEPS public use data manager at the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857 (301-427-1406).

C. Technical and Programming Information

1.0 General Information

This documentation describes one in a series of public use event files from the 2022 MEPS HC and MPC. It was released as an ASCII data file (with related SAS, SPSS, Stata, and R programming statements and data user information) and as a SAS data set, a SAS transport file, a Stata data set, and an Excel file. The 2022 Prescribed Medicines Public Use File (hereafter referred to as the PMED PUF) provides detailed information on household-reported prescribed medicines from a nationally representative sample of the U.S. civilian noninstitutionalized population. Data from the PMED PUF can be used to make estimates of retail prescribed medicine utilization and expenditures for calendar year 2022. The file contains 65 variables and has a logical record length of 587 with an additional 2-byte carriage return/line feed at the end of each record. As illustrated below, this PUF consists of MEPS data obtained in the 2022 portion of Round 7, and all of Rounds 8 and 9 for Panel 24; the 2022 portion of Round 3, and all of Rounds 4 and 5 for Panel 26; and Rounds 1 and 2, and the 2022 portion of Round 3 for Panel 27 (i.e., the rounds for MEPS panels covering calendar year 2022).

Full year (FY) 2022 includes three panels of data; Panel 24 was extended to include Rounds 7, 8 and 9.



Each record in the PMED PUF represents a fill or refill of a prescribed medicine reported by the respondent as being obtained by a member of the household at any pharmacy, including mail-order or on-line. In addition to expenditures related to the prescribed medicine, each record contains household-reported characteristics.

Data from this event PUF can be merged with other 2022 MEPS HC PUFs for the purpose of appending person-level data, such as demographic characteristics or health insurance coverage to each prescribed medicine record.

Counts of prescribed medicine utilization are based entirely on household reports. Information from the PC (within the MEPS MPC, see Section B 2.0 for more details on the MPC) was used to provide expenditure and payment data, as well as details of the medication (e.g., strength, quantity, etc.).

This PUF can also be used to construct summary variables of expenditures, sources of payment, and related aspects of utilization of prescribed medicines. Aggregate annual person-level information on the use of prescribed medicines and other health services is provided in the 2022 Full Year Consolidated PUF (hereafter referred to as the Consolidated PUF), where each record represents a MEPS sampled person.

This document offers a brief overview of the types and levels of data provided and the content and structure of the PUF and the codebook. It contains the following sections:

- Data File Information (Section 2.0)
- Survey Sample Information (Section 3.0)
- General Data Editing and Imputation Methodology (Section 4.0)
- Strategies for Estimation (Section 5.0)
- Merging/Linking MEPS Data Files (Section 6.0)
- Variable-Source Crosswalk (Section D)

For more information on the MEPS HC sample design, see Chowdhury, et al. (2019). For information on the MEPS MPC design, see RTI (2023). A copy of the survey instrument used to collect the information in this PUF is available on the MEPS website.

2.0 Data File Information

The 2022 PMED PUF contains 232,605 prescribed medicine records. Each record represents one household-reported fill or refill of a prescribed medicine that was obtained during calendar year 2022 at any retail pharmacy, including mail-order or on-line. Of the 232,605 prescribed medicine records, 229,956 records are associated with persons having a positive person-level weight (PERWT22F). The records in this PUF are prescribed medicine fills or refills obtained by persons who had to meet either a) or b) below:

a) Be classified as a Key in-scope person who responded for their entire period of 2022 eligibility (i.e., persons with a positive 2022 full-year person-level weight, PERWT22F > 0), or

b) Be an eligible member of a family whose Key in-scope members have a positive person-level weight (PERWT22F > 0). (Such a family consists of all persons with the same value for FAMIDYR.) That is, the person must have a positive full-year family-level weight (FAMWT22F > 0). Note that FAMIDYR and FAMWT22F are variables on the 2022 Consolidated PUF.

Persons with no prescribed medicine use for 2022 are not included in this PUF (but are represented on MEPS person-level files). A codebook for the PMED PUF is provided.

This PUF includes prescribed medicine records for all household members who resided in eligible responding households and for whom at least one prescribed medicine was reported. Only prescribed medicines that were obtained in calendar year 2022 are represented in this PUF. This PUF includes prescribed medicines identified in the Prescribed Medicines (PM) section of the HC survey instrument, as well as those prescribed medicines identified in association with other medical events. Each record in this PUF represents a single acquisition of a prescribed medicine reported by household respondents. Some household members may have multiple acquisitions of prescribed medicines and thus will be represented in multiple records in this PUF. Other household members may have no reported acquisitions of prescribed medicines and thus will have no records in this PUF.

Prior to Panel 21 Round 5 and Panel 22 Round 3, when diabetic supplies, such as syringes and insulin, were mentioned in the Other Medical Expenses (OM) section of the MEPS HC, the interviewer was directed to collect information on these items in the PM section of the MEPS questionnaire. To the extent that these items are purchased without a prescription, they represent a non-prescription addition to the MEPS prescription drug expenditure and utilization data. Although these items may be purchased without a prescription, a prescription purchase may be required to obtain third party payments. Analysts are free to code and define diabetic supply/equipment and insulin events utilizing their own coding mechanism. If desired, this would enable analysts to subset the Prescribed Medicines file to exclude these types of events. Starting in Panel 21 Round 5 and Panel 22 Round 3, diabetic supply/equipment and insulin are no longer mentioned in the OM section but are mentioned and collected in the PM section. Therefore, diabetic supply/equipment and insulin are collected as other Prescribed Medicines. The charges and payments are no longer collected for Prescribed Medicines in the MEPS HC.

It should also be noted that refills are included in this PUF. The HC obtains information on the name of the prescribed medicine and the number of times the medicine was obtained. The data collection design for the HC does not allow separate records to be created for multiple acquisitions of the same prescribed medicine. However, in the PC, each original purchase, as well as any refill, is considered a unique prescribed medicine event. Therefore, for the purposes of editing, imputation, and analysis, all records in the HC were “unfolded” to create separate records for each original purchase and each refill. Please note that for multiple acquisitions of the same drug, MEPS did not collect information in the HC to distinguish between the original purchase and refills. The survey only collected data on the number of times a prescribed medicine was acquired during a round. In some cases, all purchases may have been refills of an original purchase in a prior round or prior to the survey year.

Each record in this PUF includes the following: an identifier for each unique prescribed medicine; detailed characteristics associated with the event (e.g., national drug code [NDC], medicine name, selected Multum Lexicon variables [see Section 2.6.3 for more information on the Multum Lexicon variables included on this file], etc.); when the person first used the medicine; total expenditure and sources of payments; types of pharmacies that filled the household's prescriptions; and a full-year person-level weight.

Data from this PUF can be merged with MEPS HC person-level data using the unique person identifier, DUPERSID, to append person-level data such as demographic characteristics or health insurance coverage to each record. Data from this PUF can also be merged with the Consolidated PUF to estimate expenditures for persons with prescribed medicines. The PMED PUF can also be linked to the MEPS 2022 Medical Conditions PUF. Please see Section 6.0 or the 2022 Appendix PUF, HC 239I, for details on how to link MEPS data files.

2.1 Codebook Structure

For most variables in the PMED PUF, both weighted and unweighted frequencies are provided in the accompanying codebook. The exceptions to this are weight variables and variance estimation variables. Only unweighted frequencies of these variables are included in the accompanying codebook file. See the Weights Variables list in Section D, "Variable-Source Crosswalk".

The codebook and data file list variables in the following order:

- Unique person identifiers
- Unique prescribed medicine identifiers
- Other survey administration variables
- Prescribed medicine characteristics variables
- Multum Lexicon variables
- Expenditure variables
- Weight and variance estimation variables

Note that the person identifier corresponds to a unique person and the prescribed medicine event identifier corresponds to a unique event.

2.2 Reserved Codes

The PMED PUF contains several reserved code values.

Table 1

Reserved Code Values and Definitions

Value		Definition
-1	Inapplicable	Question was not asked due to skip pattern
-7	Refused	Question was asked and respondent refused to answer question
-8	Don't Know	Question was asked and respondent did not know answer or the information could not be ascertained
-14	Not Yet Taken/Used	Respondent answered that the medicine has not yet been used
-15	Cannot Be Computed	Value cannot be derived from data

The value Cannot Be Computed (-15) is assigned to MEPS constructed variables when there was not enough information from the instrument to calculate the constructed variables. Not having enough information is often the result of skip patterns in the data or of missing information stemming from the responses Refused (-7) or Don't Know (-8). Note that, in addition to Don't Know, reserved code -8 also includes cases for which the information from the question was not ascertained.

Generally, values of -1, -7, -8 and -15 have not been edited in this PUF. However, this is not true if a prescription drug name was determined to be a confidentiality risk. In these instances, the corresponding NDC was replaced with -15, the Multum Lexicon therapeutic class replaced the RXDRGNAM (Multum drug name) determined to be a confidentiality risk, and RXNAME (pharmacy drug name) was set to -15. When the therapeutic class, subclass, or sub-subclass was determined to be a confidentiality risk, the value was replaced with -15. The value -14 was a valid value only for the variable representing the year the household member first used the medicine (RXBEGYRX). RXBEGYRX = -14 means that when the interviewer asked the respondent the year the household member first started using the medicine, they responded that the household member had not yet started using the medicine (See section C, 2.6.2).

Analysts who would like to recode these values can find skip patterns in the questionnaire found in the Survey Questionnaires section of the MEPS.

2.3 Codebook Format

The PMED codebook describes an ASCII data set (although the data are also being provided in a SAS dataset, SAS transport file, Stata dataset, and Excel file) and provides the programming identifiers for each variable.

Table 2

Programming Identifiers for Each Variable in the PMED PUF

Identifier	Description
Name	Variable name
Description	Variable descriptor
Format	Number of bytes
Type	Type of data: numeric (indicated by NUM) or character (indicated by CHAR)
Start	Beginning column position of variable in record
End	Ending column position of variable in record

2.4 Variable Source and Naming Conventions

In general, the variable names reflect the content of the variable. All imputed/edited variables end with an "X."

As the collection, universe, or categories of variables were altered, some variable names have been appended with "_Myy", where "yy" indicates the collection year in which the alterations were made. Such alterations are described in detail throughout this document.

2.4.1 Variable-Source Crosswalk

Variables contained in this PMED PUF were derived from the MPC data collection instrument or from the Multum Lexicon database from Cerner Multum, Inc. The source of each variable is identified in Section D, entitled "Variable-Source Crosswalk." Sources for each variable are indicated in one of five ways:

1. Variables derived from CAPI or assigned in sampling are indicated as "CAPI derived" or "Assigned in sampling;"
2. Variables from one or more specific questions have those questionnaire sections and question numbers indicated in the "Source" column;
3. Variables constructed from multiple questions by complex algorithms are labeled "Constructed" in the "Source" column;
4. Variables that have been edited or imputed are so indicated; and
5. Variables derived from the Multum Lexicon database are so indicated.

2.4.2 Expenditure and Source of Payment Variables

Only imputed/edited versions of the expenditure variables are provided in this PUF. Expenditure variables in this PMED PUF follow a standard naming convention.

The 10 source of payment variables and one sum of payments variable are named consistently in the following way: The first two characters indicate the type of event:

IP - inpatient stay

OB - office-based visit

ER - emergency room visit

OP - outpatient visit

HH - home health visit

DV - dental visit

OM - other medical equipment

RX - prescribed medicine

In the case of the source of payment variables, the third and fourth characters indicate:

SF - self or family

OF - other federal government

MR - Medicare

SL - state/local government

MD - Medicaid

WC - Workers' Compensation

PV - private insurance

OT - other insurance

VA - Veterans Administration/CHAMPVA

TR - TRICARE

XP - sum of payments

The fifth and sixth characters indicate the year (22). The seventh character being "X" indicates the variable is edited/imputed.

For example, RXSF22X is the edited/imputed amount paid by self or family for the 2022 prescribed medicine expenditure.

2.5 Data Collection

Data regarding prescription drugs were obtained through the HC questionnaire and a pharmacy follow-back component within the MPC.

2.5.1 Methodology for Collecting Household-Reported Variables

During each round of the MEPS HC, respondents were asked to supply the name of any prescribed medicine they or their family members purchased or otherwise obtained during that round at any pharmacy, including mail-order or on-line. For each medicine in each round, the following information was collected: the name(s) of any health problems the medicine was

prescribed for; the number of times the prescription medicine was obtained or purchased; the year and month in which the person first used the medicine; and a list of the names, addresses, and types of pharmacies that filled the household's prescriptions.

In consultation with an industry expert, outlier values for the number of times a household reported purchasing or otherwise obtaining a prescription drug in a particular round were determined by comparing the number of days a person was in the round to the number of times the person was reported to have obtained the drug in the round. For these events, a new value for the number of times a drug was purchased or otherwise obtained by a person in a round was imputed. In addition, for rounds in which a household respondent did not know/remember the number of times a certain prescribed medicine was purchased or otherwise obtained, the number of fills or refills was imputed.

For those rounds that spanned two years, drugs mentioned in that round were allocated between the years based on the number of times the respondent said the drug was purchased in the respective year, the year the person started taking the drug, the length of the person's round, the dates of the person's round, and the number of drugs for that person in the round.

2.5.2 Methodology for Collecting Pharmacy-Reported Variables

If the household member with the prescription gave written permission to release his or her pharmacy records, pharmacy providers identified by the household were contacted by telephone for the pharmacy follow-back component. Following an initial telephone contact, the signed permission forms and materials explaining the study were faxed (or mailed) to cooperating pharmacy providers. The materials informed the providers of all persons participating in the survey who had prescriptions filled at their place of business and requested a computerized printout of all prescriptions filled for each person. Pharmacies can choose to provide printouts or data files or to report information in computer assisted telephone interviews (CATI). The CATI instrument was also used to enter information from printouts. For each medication listed, the following information was requested: national drug code (NDC), medication name, strength of medicine (amount and unit), quantity (package size/amount dispensed), days supplied, and payments by source. When an NDC was provided, often the drug name and other drug characteristics were obtained from secondary proprietary data sources.

2.6 File Contents

2.6.1 Survey Administration Variables

Person Identifier Variables (DUID, PID, DUPERSID)

The definitions of Dwelling Units (DUs) in the MEPS Household Survey are generally consistent with the definitions employed for the NHIS. The dwelling unit ID (DUID) is a 7-digit number consisting of a 2-digit panel number followed by a 5-digit random number assigned after the case was sampled for MEPS. A 3-digit person number (PID) uniquely identifies each person

within the DU. The variable DUPERSID is the combination of DUID and PID. IDs begin with the 2-digit panel number.

For detailed information on dwelling units and families, please refer to the documentation for the 2022 Population Characteristics PUF.

Record Identifier Variables (RXRECIDX, LINKIDX, DRUGIDX)

The variable RXRECIDX uniquely identifies each record in this PUF. This 19-character variable comprises the following components: prescribed medicine person-drug-round-level identifier generated through the HC (positions 1-16) + enumeration number (positions 17-19). The prescribed medicine person-drug-round-level ID generated through the HC (positions 1-16) can be used to link a prescribed medicine event to the Medical Conditions PUF, via a link file, and is provided in this PUF as the variable LINKIDX. For more details on linking, please refer to Section 6.1: Linking to the Medical Conditions PUF and to the 2022 Appendix PUF. The prescribed medicine person-drug-level ID generated through the HC, DRUGIDX, can be used to link drugs across rounds. DRUGIDX was first added to the file for 2009; for 1996 through 2008, the RXNDC linked drugs across rounds.

The following hypothetical example illustrates the structure of these ID variables. This example illustrates a person in Rounds 1 and 2 of the household interview who reported having purchased Amoxicillin three times. The following example shows three acquisition-level records, all having the same DRUGIDX (2700002026002), for one person (DUPERSID=2700002026) in two rounds. Generally, within a round, one NDC is associated with a prescribed medicine event because matching was performed at a drug level, as opposed to an acquisition level. The LINKIDX (2700002026002103) remains the same for both records in Round 1 but varies across rounds. The RXRECIDX (2700002026002103001, 2700002026002103002, 2700002026002203001) differs for all three records.

Table 3

Listing of Hypothetical Acquisition-Level Records

DUPERSID	PURCHRD	RXRECIDX	LINKIDX	DRUGIDX	RXNDC
2700002026	1	2700002026002103001	2700002026002103	2700002026002	00093310905
2700002026	1	2700002026002103002	2700002026002103	2700002026002	00093310905
2700002026	2	2700002026002203001	2700002026002203	2700002026002	00003010955

There can be multiple RXNDCs for a LINKIDX. All the acquisitions in the LINKIDX represent the same drug (active ingredients), but the RXNDCs may represent different manufacturers. (For more details on matching, please see Section 4.0).

Panel Variable (PANEL)

PANEL is a constructed variable used to specify the panel number for the person. PANEL will indicate Panel 24, Panel 26, or Panel 27 for each person in this PUF. Panel 24 is the panel that started in 2019, Panel 26 is the panel that started in 2021, and Panel 27 is the panel that started in 2022.

Round Variable (PURCHRD)

The variable PURCHRD indicates the round in which the prescribed medicine was purchased and takes on the value of 1, 2, 3, 4, 5, 7, 8, or 9. Rounds 7 (partial), 8, and 9 are associated with MEPS survey data collected from Panel 24. Likewise, Rounds 3 (partial), 4, and 5 are associated with data collected from Panel 26, and Rounds 1, 2, and 3 (partial) are associated with data collected from Panel 27.

2.6.2 Characteristics of Prescribed Medicine Events

When Prescribed Medicine Was First Taken (RXBEGMM-RXBEGYRX)

There are two variables to indicate when a prescribed medicine was first taken (used), as reported by the household respondent. They are the following: RXBEGMM denotes the month in which a person first started taking a medication, and RXBEGYRX reflects the year in which a person first started taking a medicine. These "first taken" questions are only asked the first time a prescription is mentioned by the household respondent. These questions are not asked about refills of the prescription in subsequent rounds. Values, including Not Yet Used or Taken (-14), are carried forward from prior rounds for all medications. The variable DRUGIDX (see Section 2.6.1) can be used to determine whether a medication was reported in a prior round. For purposes of confidentiality, RXBEGYRX was bottom-coded at 1937.

Prescribed Medicine Attributes (RXNAME-RXDAYSUP)

For each prescribed medicine included in this PUF, several data items collected describe in detail the medication obtained or purchased. These data items are the following:

a) Medication name - pharmacy reported (RXNAME)

b) Generic medication name for both brand and generic drugs - Multum Lexicon (RXDRGNAM)

c) National drug code (RXNDC)

d) Quantity of the prescribed medicine dispensed (RXQUANTY), e.g., number of tablets in the prescription

e) Form of the prescribed medicine (RXFORM), e.g., powder

f) Unit of measurement for form of Rx/prescribed medicine (RXFRMUNT), e.g., oz

g) Strength of the dose of the prescribed medicine (RXSTRENG), e.g., 10

h) Unit of measurement for the strength of the dose of the prescribed medicine (RXSTRUNT), e.g., gm

i) Days supplied (RXDAYSUP)

j) Diabetic supplies/equipment (DiabEquip)

Days supplied was first collected and released to the public on the 2010 PMED PUF. Many pharmacies did not provide this information, and imputation was not attempted in these cases. A value of 999 indicates the medication is to be taken as needed. No edits were implemented to impose consistency between the quantity and days supplied, and no edits were implemented for very high values.

The 2022 PMED PUF contains multiple values of RXFORM and RXFRMUNT not found in PMED PUFs in prior years. There was no reconciliation of inconsistencies or duplication between RXFORM and RXFRMUNT. Please refer to Appendices 1, 2, and 3 for definitions for RXFORM, RXFRMUNT, and RXSTRUNT abbreviations, codes and symbols. Please refer to Appendix 4 for therapeutic class code definitions.

The national drug code (NDC) is an 11-digit code. The first 5 digits indicate the manufacturer of the prescribed medicine. The next 4 digits indicate the form and strength of the prescription, and the last 2 digits indicate the package size from which the prescription was dispensed. NDC values were imputed from a proprietary database to certain PC prescriptions because the NDC reported by the pharmacy provider was not valid. These records are identified by RXFLG = 3.

For the years 1996-2004, AHRQ's licensing agreement for the proprietary database precluded the release of the imputed NDC values to the public, so for these prescriptions, the household-reported name of the prescription (RXHHNAME) and the original NDC (RXNDC) and prescription name (RXNAME) reported by the pharmacy were provided on the file to allow analysts to do their own imputation. In addition, for the years 1996-2004, the imputed NDC values for the RXFLG = 3 cases could be accessed through the AHRQ Data Center. For those events not falling into the RXFLG = 3 category, the reserved code (-13) was assigned to the household-reported medication name (RXHHNAME). The household-reported name of the prescription (RXHHNAME) is no longer provided in this PUF; however, this variable may be accessed through the AHRQ Data Center as can the original pharmacy-reported name and NDC. For information on accessing data through the AHRQ Data Center, see the Data Center section of the MEPS website. Beginning with the 2013 data, the variable RXDRGNAM is included on the file. This drug name is the generic name of the drug most commonly used by prescribing physicians. It is supplied by the Multum Lexicon database. RXDRGNAM for earlier years can be found in the Multum Lexicon Addendum Files to MEPS Prescribed Medicines Files for 1996-2013. Additionally, the 2013 addendum file contains a version of RXDRGNAM that has corrected values for some records. See the documentation for the addendum files.

Generally, orphan drugs and drugs AHRQ estimated were used by fewer than 400,000 people are masked to ensure confidentiality of the data, unless use of the drug does not reveal specific information about the condition treated (for example, cold remedies). For these drugs, details are generally recoded as missing and RXNAME is recoded to whatever therapeutic class information remains. Prospective researchers seeking access to restricted data must complete a MEPS Data Center application. See the Data Center section of the MEPS website.

Starting in the 2018 PMED PUF, the variable DiabEquip (OTHER DIABETIC EQUIPMENT OR SUPPLIES) indicates the record is for diabetic supplies/equipment that were first reported in response to question PM40, which asks whether the person obtained "any other diabetic equipment or supplies, typically prescribed by a physician; for example, syringes, a blood glucose monitor machine, glucose meter, insulin pumps, lancets, alcohol swabs or control solution."

Imputed data in this event PUF, unlike other MEPS event files, may still have missing data. This is because imputed data in this PUF are imputed from the PC or from a proprietary database. These sources did not always include complete information for each variable but did include an NDC, which would typically enable an analyst to obtain any missing data items. For example, although there are a substantial number of missing values for the strength of the prescription that were not supplied by the pharmacist, these missing values were not imputed because this information is embedded in the NDC.

Type of Pharmacy (PHARTP1-PHARTP11)

Household respondents were asked to list the type of pharmacy from which household members purchased their medications. A respondent could list multiple pharmacies associated with each member's prescriptions in a given round or over the course of all rounds combined covering the survey year. All household-reported pharmacies are provided in this PUF, but there is no link in the survey or in the data file enabling analysts to know the type of pharmacy from which a specific prescription was obtained if multiple pharmacies are listed. The variables PHARTP1 through PHARTP11 identify the types of pharmacy providers from which the person's prescribed medicines were purchased. The possible types of pharmacies include the following: (1) mail-order, (2) another store, (3) HMO/clinic/hospital, (4) drug store, and (5) on-line. A -1 value for PHARTPn indicates that the household did not report "n^{th}" pharmacy. The pharmacy types are those reportedly used by the person in the purchase round and any prior rounds.

Analytic Flag Variables (RXFLG-INPCFLG)

There are four flag variables included in this PUF (RXFLG, IMPFLAG, PCIMPFLG, and INPCFLG).

RXFLG indicates whether there was any imputation performed on this record for the NDC variable, and if imputed, from what source the NDC was imputed. If no imputation was performed, RXFLG = 1. If the imputation source was another PC record, RXFLG = 2. Similarly, if the imputation source was a secondary, proprietary database and not the PC database, RXFLG = 3.

IMPFLAG indicates the method of creating the expenditure data on this record: IMPFLAG = 2 indicates complete PC data, IMPFLAG = 4 indicates fully imputed data, and IMPFLAG = 5 indicates partially imputed data. Beginning with the 2017 data, the MEPS ceased asking households to report payments for any drugs and diabetic equipment and supplies, so the values 1 and 3 are irrelevant for prescribed medicine events.

PCIMPFLG indicates the type of match between a household-reported event and a PC-reported event. PCIMPFLG = 1 indicates an exact match for a specific drug for a person between the PC and the HC. PCIMPFLG = 2 indicates not an exact match between the PC and HC for a specific person (i.e., a person's household-reported event did not have a matched counterpart in the person's corresponding PC records). PCIMPFLG assists analysts in determining which records have the strongest link to data reported by a pharmacy. It should be noted that whenever there are multiple purchases of a unique prescribed medication in a given round, MEPS did not collect information that would enable designating any single purchase as the "original" purchase at the time the prescription was first filled, and then designating other purchases as "refills." The analyst needs to keep this in mind when the purchases of a medication are referred to as "refills" in the documentation. Because matching was performed at a drug level as opposed to an acquisition level, the values for PCIMPFLG are either 1 or 2. For more details on general data editing/imputation methodology, please see Section 4.0.

INPCFLG denotes whether or not a household member had any pharmacy-reported data, that is, at least one prescription drug purchase in the PC (0 = NO, 1 = YES).

Clinical Classification Software Refined Codes

Information on household-reported medical conditions (ICD-10-CM condition codes) and aggregated clinically meaningful categories generated using Clinical Classification Software Refined (CCSR) associated with each prescribed medicine are not provided on this file. For information on ICD-10-CM condition codes and associated CCSR codes, see the MEPS 2022 Medical Conditions PUF and the 2022 Appendix to MEPS Event PUFs.

2.6.3 Multum Lexicon Variables from Cerner Multum, Inc.

Each record on this file contains the following Multum Lexicon variables:

RXDRGNAM	Generic name of the drug most commonly used by prescribing physicians
TCn	Therapeutic classification variable - assigns a drug to one or more therapeutic/chemical categories; can have up to three categories per drug
TCnSn	Therapeutic sub-classification variable - assigns one or more sub-categories to a more general therapeutic class category given to a drug
TCnSn_n	Therapeutic sub sub-classification variable - assigns one or more sub sub-categories to a more general therapeutic class category and sub-category given to a drug

Analysts should carefully review the data when conducting trend analyses or pooling years or panels because Multum's therapeutic classification has changed across the years of the MEPS. The Multum variables on each year of the MEPS PMED PUFs reflect the most recent classification available in the year the data were released. Since the release of the 1996 PMED PUF, the Multum classification has changed by the addition of new classes and subclasses, and by changes in the hierarchy of classes. Three examples follow: 1) In the 1996-2004 PMED PUFs, antidiabetic drugs are a subclass of the hormone class, but in subsequent files, the antidiabetic subclass is part of a class of metabolic drugs. 2) In the 1996-2004 PMED PUFs, antihyperlipidemic agents are categorized as a class with a number of subclasses including HMG-COA reductase inhibitors (statins). In subsequent files, antihyperlipidemic drugs are a subclass, and HMG-COA reductase inhibitors are a sub-subclass, in the metabolic class. 3) In the 1996-2004 PMED PUFs, the psychotherapeutic class comprises drugs from four subclasses: antidepressants, antipsychotics, anxiolytics/sedatives/hypnotics, and CNS stimulants. In subsequent files, the psychotherapeutic class comprises only antidepressants and antipsychotics. Changes may occur between any years. For additional information on these and other Multum Lexicon variables, as well as the Multum Lexicon database itself, please refer to the Cerner Multum file.

Analysts should also be aware of a problem discovered with the linking between the MEPS PMED PUFs and the Cerner Multum file that resulted in some incorrect therapeutic classes being assigned. In particular, some diagnostic tests and medical devices were inadvertently assigned to be in a therapeutic class when they should not have been. Specifically, from 1996-2002, some diabetic supplies were assigned to be in TC1S1 = 101 (sex hormone), and from 2003 through 2010 some diabetic supplies were assigned to be in TC1S1 = 37 (toxoids). In addition, starting in 2006, NDC 00169750111 should have been assigned to TC1 = 358 and TC1S1 = 99. In 2020 and 2021, NDCs 49502019671 and 49502019675 should have RXDRGNAM="INSULIN GLARGINE", and TC1=358, TC1S1=99, and TC1S1_1=215. Analysts should use caution when using the Cerner Multum therapeutic class variables for analysis and should always check for accuracy.

PREGCAT is no longer included in the PMED PUF. The Food and Drug Administration (2014) ceased using "the pregnancy categories because they are often viewed as confusing and overly simplistic and don't effectively communicate the risk a drug may have during pregnancy and lactation and in females and males of reproductive potential."

Researchers using the Multum Lexicon variables are requested to cite Multum Lexicon as the data source.

2.6.4 Expenditure Variables (RXSF22X-RXXP22X)

Definition of Expenditures

Expenditures in this PUF refer to payments for health care services. More specifically, expenditures in MEPS are defined as the sum of payments for care received, including out-of-pocket payments and payments made by private insurance, Medicaid, Medicare, and other sources. The definition of expenditures used in MEPS differs from its predecessors, the 1987

NMES and 1977 NMCES surveys, where "charges" rather than sum of payments were used to measure expenditures. This change was adopted because charges became a less appropriate proxy for medical expenditures during the 1990s due to the increasingly common practice of discounting. Although measuring expenditures as the sum of payments incorporates discounts in the MEPS expenditure estimates, the estimates do not incorporate any manufacturer or other rebates paid to pharmacy benefit managers, health plans, Medicaid programs, or other purchasers. Another general change from the two prior surveys is that charges associated with uncollected liability, bad debt, and charitable care (unless provided by a public clinic or hospital) are not counted as expenditures, because there are no payments associated with those classifications. For details on expenditure definitions, please refer to Monheit, et al. (1999).

If examining trends in MEPS expenditures or performing longitudinal analysis on MEPS expenditures please refer to Section C, sub-sections 3.5 and 6.2 respectively for more information.

Sources of Payment

In addition to total expenditures, variables are provided which itemize expenditures according to major source of payment categories. These categories are:

1. Out-of-pocket by User (self or family) - includes any deductible, coinsurance, and copayment amounts not covered by other sources, as well as payments for services and providers not covered by the person's insurance or other sources,
2. Medicare,
3. Medicaid,
4. Private Insurance,
5. Veterans Administration/CHAMPVA, excluding TRICARE,
6. TRICARE,
7. Other Federal Sources - includes Indian Health Service, military treatment facilities, and other care by the federal government,
8. Other State and Local Source - includes community and neighborhood clinics, state and local health departments, and state programs other than Medicaid,
9. Workers' Compensation, and
10. Other Unclassified Sources - includes sources such as automobile, homeowner's, and liability insurance, and other miscellaneous or unknown sources.

Pharmacies rarely report discounts. Manufacturer discounts and coupons reported by pharmacies are excluded from the total expenditure and source of payment variables, because the

manufacturer is paying itself. Free drugs are included in this PUF, but discounts, write-offs, and free drugs at commercial pharmacies are not counted toward the total expenditure and source of payment variables, because these reflect pharmacy pricing strategies. Discounts, write-offs, and free drugs at safety net providers and government pharmacies are paid with public sector funds, are included in total expenditures, and are assigned to a public source of payment or other unclassified sources based on the type of pharmacy and the person's insurance coverage.

Prior to 2019, for cases where reported insurance coverage and sources of payment are inconsistent, the positive amount from a source inconsistent with reported insurance coverage was moved to one or both source categories Other Private and Other Public. Beginning in 2019, this step was removed and the inconsistency between the payment sources and insurance coverage is allowed to remain - the amounts are not moved to Other Private and Other Public categories anymore. The two source of payment categories, Other Private and Other Public, are no longer available.

3.0 Survey Sample Information

3.1 Discussion of Pandemic Effects on Quality of MEPS Data

The challenges associated with MEPS data collection in 2020 after the onset of the COVID-19 pandemic continued through 2021 and possibly into 2022. The major modifications to the standard MEPS study design remained in effect, permitting data to be collected safely but with accompanying concerns related to the quality of the data obtained. The suggestion made in the documentation for the FY 2020 and FY2021 MEPS Consolidated PUF data still holds. Researchers are counseled to take care in the interpretation of estimates based on data collected from these three calendar years. This includes the comparison of such estimates to those of other years and corresponding trend analyses.

Section 3.1 of the documentation for the 2020 Consolidated PUF provides a general discussion of the impact of the COVID-19 pandemic on several other major in-person federal surveys as well as on MEPS. In addition, it offers a detailed look at how MEPS was modified to permit safe data collection and the development of useful estimates at a time when the way the U.S. health care system functioned underwent many transformations to meet population needs. Three sources of potential bias were identified for MEPS for FY 2020: (1) long recall period for Round 6 of Panel 23, (2) switching from in-person to telephone interviewing which likely had a larger impact on Panel 25, and (3) the impact of CPS bias on the MEPS weights. A number of statistically significant differences were found between panels for FY 2020. Those findings are discussed in MEPS HC 224.

Concerns of potential bias for FY 2021 and between panel differences are discussed in Section 3.1 of the documentation for the 2021 Consolidated PUF. Additional analysis has also uncovered a concerning trend on event reporting in MEPS following the COVID-19 pandemic. While reporting of other event types has rebounded from the dip experienced in 2020, inpatient (IP) and emergency room (ER) utilization reports collected in FY 2021 did not rebound as much as key benchmarks, even though these are the most salient event types. Modifications made to the

MEPS sample design discussed in the 2022 Population Characteristics PUF may have partially contributed to the concerning trend.

Concerns for potential bias for FY 2022 include:

- The impact of the pandemic on NHIS data collection and the resulting Panel 26 MEPS sample (Section 3.1.1 of the 2022 Population Characteristics PUF). NHIS response rates in the pandemic and shifts in the resulting MEPS sample may have increased the likelihood that the MEPS Panel 26 respondents differed in composition compared to previous years.

- The extension of panels (beginning of Section 3.1 of the 2022 Population Characteristics PUF). While there is a benefit in boosting the MEPS sample size by keeping pre-pandemic panels active for an additional two years to counter reduced response rates, there are two risks with this approach: attrition in these panels beyond what is experienced in two years, which may lead households with more serious health issues to leave MEPS, and a conditioning effect whereby respondents learn over time that reporting events results in a longer interview.

- Significantly lower response rates (Section 3.2 of the 2022 Population Characteristics PUF) that could differentially exclude households more likely to experience IP stays. The demographic shifts on MEPS between 2019 and 2021 suggest a more educated, higher-income, older MEPS.

Preliminary analyses undertaken to examine the quality of the MEPS FY 2022 data compared health care utilization for the MEPS target population between the panels fielded. These comparisons were undertaken for the full sample and the three age groups of 0-17, 18-64, and 65+.

These comparisons found no major differences in IP or ER visits between the three panels. Slight differences were observed in dental visits and outpatient visits. For dental visits, Panel 26 reported at a higher rate than Panel 24 or Panel 27 in the age range 18-64. For outpatient visits, Panel 24 reported at a lower rate than Panel 26 and Panel 27 in the age range 18-64.

In summary, the weights developed for the MEPS FY 2022 data can be expected to produce useful estimates for initial analyses. Further analyses of MEPS estimates will be conducted as part of the production of the FY 2022 Consolidated PUF to be released later in 2024. This will help identify any additional data quality issues as well as possible improvements that could be implemented.

The various actions taken in the development of the person-level weights for the MEPS FY 2022 data were designed to limit the potential for bias in the data due to changes in data collection and response bias. However, evaluations of MEPS data quality in 2021 and 2022 suggest that users of the MEPS FY 2022 PUFs should continue to exercise caution when interpreting estimates and assessing analyses based on these data, as well as in comparing 2022 estimates to those of prior years.

3.2 Sample Weight (PERWT22F)

There is a single full-year person-level weight (PERWT22F) assigned to each record for each Key, in-scope person who responded to MEPS for the full period of time that they were in scope during 2022. A Key person was either a member of a responding NHIS household at the time of the interview or joined a family associated with such a household after being out of scope at the time of the NHIS (the latter circumstance includes newborns as well as those returning from military service, an institution, or residence in a foreign country). A person is in scope whenever they are a member of the civilian noninstitutionalized portion of the U.S. population.

3.3 Details on Person Weight Construction

The person-level weight PERWT22F was developed in several stages. First, a person-level weight for Panel 24 was created, including an adjustment for nonresponse over time and raking. The raking involved adjusting to several sets of marginal control totals reflecting Current Population Survey (CPS) population estimates based on six variables. The six variables used in the establishment of the initial person-level control figures were: educational attainment of the reference person (three categories: no degree; high school/GED only or some college; bachelor's or a higher degree); Census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic; Black, non-Hispanic; Asian, non-Hispanic; and other); sex; and age (0-18, 19-25, 26-34, 35-44, 45-64, and 65 or older). (Note, however, that for confidentiality reasons, the MSA status variables are no longer released for public use.) The person-level weights for Panel 26 and Panel 27 were created similarly. Secondly, a composite weight was formed by multiplying each weight from Panel 24 by the factor .22, each weight from Panel 26 by the factor .29, and each weight from Panel 27 by the factor .49. The choice of factors reflected the relative effective sample sizes of the three panels, helping to limit the variance of estimates obtained from pooling the three samples. Weights for the 2022 Population Characteristics PUF were then developed by raking the composite weight to the same set of CPS-based control totals.

The approach for establishing the 2022 Consolidated PUF weight is as follows. When poverty status information derived from MEPS income variables becomes available, a final raking is undertaken. The full sample weight appearing on the Population Characteristics PUF for a given year is re-raked, replacing educational attainment with poverty status while retaining the other five raking variables previously indicated. Specifically, control totals based on CPS estimates of poverty status (five categories: below poverty, from 100 to 125 percent of poverty, from 125 to 200 percent of poverty, from 200 to 400 percent of poverty, at least 400 percent of poverty) as well as age, race/ethnicity, sex, region, and MSA status are used to calibrate weights.

3.3.1 MEPS Panel 24 Weight Development Process

The person-level weight for MEPS Panel 24 was developed using the 2021 full-year weight for an individual as a "base" weight for 2021 survey participants present in 2022. For Key, in-scope members who joined an RU some time in 2022 after being out of scope in 2021, the initially assigned person-level weight was the corresponding 2021 family weight. The weighting process

included an adjustment for person-level nonresponse over Rounds 8 and 9 as well as raking to population control figures for December 2022 for Key, responding persons in scope on December 31, 2022. These control totals were derived by scaling back the population distribution obtained from the March 2023 CPS to reflect the December 31, 2022 estimated population total (estimated based on Census projections for January 1, 2023). Variables used for person-level raking included: education of the reference person (three categories: no degree; high school/GED only or some college; bachelor's or a higher degree); Census region (Northeast, Midwest, South, West); MSA status (MSA, non-MSA); race/ethnicity (Hispanic; Black, non-Hispanic; Asian, non-Hispanic; and other); sex; and age (0-18, 19-25, 26-34, 35-44, 45-64, and 65 or older). (Note, however, that for confidentiality reasons, the MSA status variables are no longer released for public use.) The final weight for Key, responding persons who were not in scope on December 31, 2022 but were in scope earlier in the year was the nonresponse-adjusted person weight without raking.

The 2021 full-year weight used as the base weight for Panel 24 was derived from the 2019 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data collection rounds in 2019, 2020, and 2021 as well as raking to the December 2019, December 2020, and December 2021 population control figures.

3.3.2 MEPS Panel 26 Weight Development Process

The person-level weight for MEPS Panel 26 was developed by using the 2021 full-year weight as a "base" weight for survey participants present in 2022.

For Key, in-scope members who joined an RU at some time in 2022 after being out of scope in 2021, the initially assigned person-level weight was the corresponding 2021 family weight. The weighting process also included an adjustment for person-level nonresponse over Rounds 4 and 5 as well as raking to the same population control figures for December 2022 used for the Panel 24 weight for Key, responding persons in scope on December 31, 2022. The same six variables used for Panel 24 raking (education level, Census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 26 raking. Similar to Panel 24, the Panel 26 final weight for Key, responding persons not in scope on December 31, 2022 but in scope earlier in the year was the nonresponse-adjusted person weight without raking.

Note that the 2021 full-year weight that was used as the base weight for Panel 26 was derived using the 2021 MEPS Round 1 weight and reflected adjustment for nonresponse over the remaining data collection rounds in 2021 as well as raking to the December 2021 population control figures.

3.3.3 MEPS Panel 27 Weight Development Process

The person-level weight for Panel 27 was developed using the 2022 Round 1 person-level weight as a "base" weight. The Round 1 weights incorporated the following components: the original household probability of selection for the NHIS and for the NHIS subsample reserved for the MEPS, an adjustment for NHIS nonresponse, the probability of selection for MEPS from the NHIS, an adjustment for nonresponse at the dwelling unit level for Round 1, and raking to

control figures at the person level obtained from the March CPS of the corresponding year. For Key, in-scope members who joined an RU after Round 1, the Round 1 DU weight served as a "base" weight.

The weighting process also included an adjustment for nonresponse over the remaining data collection rounds in 2022 as well as raking to the same population control figures for December 2022 that were used for the Panel 24 and Panel 26 weights for Key, responding persons in scope on December 31, 2022. The same six variables used for Panel 24 and Panel 26 raking (education level of the reference person, Census region, MSA status, race/ethnicity, sex, and age) were also used for Panel 27 raking. Similar to Panel 24 and Panel 26, the Panel 27 final weight for Key, responding persons who were not in scope on December 31, 2022 but were in scope earlier in the year was the nonresponse-adjusted person weight without raking.

3.3.4 The Final Weight for 2022

The final raking of those in scope at the end of the year has been described above. In addition, the composite weights of two groups of persons who were out of scope on December 31, 2022 were adjusted for expected undercoverage. Specifically, the weights of those who were out of scope on December 31, 2022, but in scope at some time during the year and were residing in a nursing home at the end of the year were poststratified to an estimate of the number of persons who were residents of Medicare- and Medicaid-certified nursing homes for part of the year (approximately 3-9 months) during 2014. This estimate was developed from data on the Minimum Data Set (MDS) of the Center for Medicare and Medicaid Services (CMS). The weights of persons who died while in scope were poststratified to corresponding estimates derived using data obtained from the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Provisional Mortality Statistics, 2018 through Last Week on CDC WONDER Online Database, released in 2023, the latest available data at the time. Separate decedent control totals were developed for the "65 and older" and "under 65" civilian noninstitutionalized populations.

Overall, the weighted population estimate for the civilian noninstitutionalized population for December 31, 2022 is 329,059,733 (PERWT22F >0 and INSC1231=1). The sum of person-level weights across all persons assigned a positive person-level weight is 333,053,243.

3.4 Coverage

The target population associated with MEPS is the 2022 U.S. civilian noninstitutionalized population. However, the MEPS sampled households are a subsample of the NHIS households interviewed in 2018 (Panel 24), 2020 (Panel 26), and 2021 (Panel 27). New households created after the NHIS interviews for the respective panels and consisting exclusively of persons who entered the target population after 2018 (Panel 24), after 2020 (Panel 26), or after 2021 (Panel 27) are not covered by the 2022 MEPS. Nor are previously out of scope persons who joined an existing household but are not related to the current household residents. Persons not covered by a given MEPS panel thus include some members of the following groups: immigrants, persons leaving the military, U.S. citizens returning from residence in another country, and persons

leaving institutions. Those not covered represent a small proportion of the MEPS target population.

3.5 Using MEPS Data for Trend Analysis

For analysts using the MEPS data for trend analysis, we note that there are uncertainties associated with 2020, 2021, and possibly 2022 data quality for reasons discussed throughout Section 3. Preliminary evaluations of a set of MEPS estimates of particular importance suggest that they are of reasonable quality. Nevertheless, analysts are advised to exercise caution in interpreting these estimates, particularly in terms of trend analyses, since access to health care was substantially affected by the COVID-19 pandemic, as were related factors such as health insurance and employment status for many persons.

The MEPS began in 1996, and the utility of the survey for analyzing health care trends expands with each additional year of data; however, when examining trends over time using the MEPS, the length of time being analyzed should be considered. In particular, large shifts in survey estimates over short periods of time (e.g. from one year to the next) that are statistically significant should be interpreted with caution unless they are attributable to known factors such as changes in public policy, economic conditions, or the MEPS methodology.

With respect to methodological considerations, changes in data collection methods, such as interviewer training, were introduced in 2013 to obtain more complete information about health care utilization from MEPS respondents; the changes were fully implemented in 2014. This effort likely resulted in improved data quality and a reduction in underreporting starting in the second half of 2013 and continuing throughout 2014 full year files; the changes have also had some impact on analyses involving trends in utilization across years. The changes in the NHIS sample design in 2016 and 2018 could also potentially affect trend analyses. The new NHIS sample design is based on more up-to-date information related to the distribution of housing units across the United States. As a result, it can be expected to better cover the full civilian noninstitutionalized population, the target population for MEPS, as well as many of its subpopulations. Better coverage of the target population helps to reduce the potential for bias in both NHIS and MEPS estimates.

Another change with the potential to affect trend analyses involved major modifications to the MEPS instrument design and data collection process, particularly in the events sections of the instrument. These were introduced in the spring of 2018 and thus affected data beginning with Round 1 of Panel 23, Round 3 of Panel 22, and Round 5 of Panel 21. Since the full year 2017 MEPS files were established from data collected in Rounds 1-3 of Panel 22 and Rounds 3-5 of Panel 21, they reflected two instrument designs. To mitigate the effect of such differences within the same full-year file, the Panel 22 Round 3 data and the Panel 21 Round 5 data were transformed to make them as consistent as possible with data collected under the previous design. The changes in the instrument were designed to make the data collection effort more efficient and easier to administer. In addition, expectations were that data on some items, such as those related to health care events, would be more complete with the potential of identifying more events. Increases in service use reported since the implementation of these changes are consistent with these expectations. *Analysts should be aware of the possible impacts of these*

changes on the data and especially on trend analyses that include the year 2018 because of the design transition.

Process changes, such as data editing and imputation, may also affect trend analyses. For example, analysts should refer to Section 2.5.11: Utilization, Expenditures, and Sources of Payment Variables in the Consolidated PUF (HC 243) and, for more detail, to Section 4.0 of this document when analyzing prescription drug spending over time.

As always, it is recommended that, before conducting trend analyses, analysts should review relevant sections of the documentation for descriptions of these types of changes that might affect the interpretation of changes over time.

To smooth or stabilize trend analyses based on the MEPS data, analysts may also wish to consider using statistical techniques such as comparing pooled time periods (e.g. 1996-1997 versus 2011-2012), working with moving averages, or using modeling techniques with several consecutive years of the data. Advice about adjusting prices for inflation is available on the MEPS website.

Finally, statistical significance tests should be conducted to assess the likelihood that observed trends are not attributable to sampling variation. In addition, researchers should be aware of the impact of multiple comparisons on Type I error. Without making appropriate allowance for multiple comparisons, the use of numerous statistical significance tests of trends will increase the likelihood of concluding that a change has taken place when one has not.

4.0 General Data Editing and Imputation Methodology

The general approach to preparing the household prescription data for this PUF was to utilize the PC prescription data to impute information collected from pharmacy providers to the household drug mentions. A matching program was adopted to link PC drugs and the corresponding drug information to household drug mentions. To improve the quality of these matches, all drugs on the household and pharmacy files were coded using a proprietary database based on the medication names provided by the household respondent and pharmacy, and, when available, the NDC provided in the pharmacy follow-back component. The matching process was done at a drug (active ingredient) level, as opposed to an acquisition level. Considerable editing was done prior to the matching to correct data inconsistencies in both data sets and to fill in missing data and correct outliers on the pharmacy file.

Drug price-per-unit outliers were analyzed on the pharmacy file by first identifying the national average drug acquisition cost (NADAC) per unit, wholesale acquisition unit cost (WAUC), and average wholesale unit price (AWUP) of the drug by linkage through the NDC to secondary data files. In general, prescription drug unit prices were deemed to be outliers by comparing unit prices reported in the pharmacy database to the NADAC per unit reported in the secondary data files and were edited, as necessary.

Prior to 2020, AWUP was the benchmark used to identify outlier prices for prescription medications in the PC. Beginning with the 2007 data, the rules used to identify outlier prices

changed. New outlier thresholds were established based on the distribution of the ratio of retail unit prices relative to the AWUP in the 2006 MarketScan Outpatient Pharmaceutical Claims database. The new thresholds vary by patent status, whereas in prior years they did not. These changes improve data quality in three ways: (1) the distribution of prices in the MEPS better benchmarks to MarketScan, overall and by patent status (Zodet et al., 2010), (2) fewer pharmacy-reported payments and quantities (for example, number of pills) are edited, and (3) imputed prices reflect prices paid, rather than AWUPs. As a result, compared with earlier years of the MEPS, starting with 2007 there is more variation in prices for generics, lower mean prices for generics, higher mean prices for brand name drugs, greater differences in prices between generic and brand name drugs, and a somewhat lower proportion of spending on drugs by families, as opposed to third-party payers. Pharmacy reports of free antibiotics were not edited as if they were outliers. Beginning with the 2010 data, some additional free drugs obtained through commercial pharmacies were not edited.

Beginning with the 2009 data, three changes in editing sources of payment data were made to improve data quality, based on a validation study (Hill et al., 2011). Two changes were made in editing fills for which pharmacies reported partial payment data. First, if the third-party amount was missing and the third-party payer was a public payer, then pharmacy reports of zero out-of-pocket amounts were preserved rather than imputed. Second, somewhat tighter outlier thresholds were implemented for the fills with partial payment data, and somewhat looser outlier thresholds were implemented for fills with complete payment data. Another change affected Medicare beneficiaries with both Part D and Medicaid coverage - reported Medicaid and other state and local program payments were no longer edited to be Medicare payments.

Beginning with the 2010 data, improvements in the payment imputation methods for pharmacy data (1) better utilize pharmacy-reported quantities to impute missing payment amounts, and (2) preserve within-NDC variation in the prices on the records for which third party payment amounts are imputed.

Beginning with the 2017 data, higher imputed prices were allowed. Imputed prices are capped to prevent the creation of unreasonable prices in cases with unreasonable quantity data. For the 2017 data, the cap was raised to account for the rising prices of specialty drugs. While there are relatively few cases for which the cap is relevant, these are expensive drugs, and this change in editing procedures accounts for more than 95% of the increase in total expenditures for prescribed medicines relative to 2016.

Beginning with the 2020 data, the rules used to identify outlier prices for prescription medications in the PC were improved based on newer price benchmarks and analyses (Ding and Hill, 2022). New outlier thresholds were established based on the distribution of the ratio of retail unit prices relative to the NADAC per unit, collected for the Centers for Medicare and Medicaid Services. When the NADAC per unit is not available, then the WAUC is used, and if neither are available, the AWUP is used. AWUP and WAUC are list prices, not averages, so the NADAC per unit better reflects the prices paid for drugs, and as a result the prices paid for generics are lower in the 2020 data, compared with the 2019 data, and fewer generic fills have third party payments.

Beginning with the 2011 data, the imputation of the number of fills for a drug was improved. In the 2011 data, for 10% of household-reported drugs the respondent did not know or remember the number of times the drug was obtained during the round. For missing and implausible values, a hot-deck procedure imputed a new number of acquisitions, drawing from the donor pool of drugs with valid values. Prior to 2011, the imputation method gave greater weight to donors with more acquisitions in the round. The new method conditions on insurance status, age, and geography, as well as drug. In the 2017 data for Panel 22 Round 3 and Panel 21 Round 5, more implausibly high numbers of fills were reported than in prior years, and so there was more extensive imputation of number of fills.

Drug matches between household drug mentions and pharmacy drug events for a person in the PC were based on drug code, medication name, and the round in which the drug was reported. The matching of household drug mentions to pharmacy drugs was performed so that the most detailed and accurate information for each prescribed medicine event was obtained. The matching program assigned scores to potential matches. Numeric variables required exact matches to receive a high score, while partial scores could be assigned to matches between character variables, such as prescription name, depending on the degree of similarity in the spelling and sound of the medication names. Household drug mentions that were deemed exact matches to PC drugs for the same person in the same round required sufficiently high scores to reflect a high-quality match. Initially, exact matches were used only once and were taken out of the donor pool from that point on (i.e., these matches were made without replacement). For remaining persons with pharmacy data from any round and unmatched household drugs, additional matches are made with replacement across rounds. Any refill of a household drug mention that had been matched to a pharmacy drug event was matched to the same pharmacy drug event. All remaining unmatched household drug mentions for persons either in or out of the PC were statistically matched to the entire pharmacy donor base with replacement by medication name, drug code, type of third-party coverage, health conditions, age, sex, and other characteristics of the individual. PC records containing an NDC imputed without an exact match on a generic code were omitted from the donor pool. Beginning with the 2008 PMED PUF, the criteria for matching were changed to allow multiple NDCs for the same drug reported by pharmacies (for example, different manufacturers) to match to one drug reported by the household. Beginning with the 2010 data, the matching process was improved for diabetic supplies to better utilize pharmacy reports of the diversity of supplies individuals purchased.

Some matches have inconsistencies between the PC donor's potential sources of payment and those of the HC recipient, and these were resolved. Beginning with the 2008 data, the method used to resolve inconsistencies in potential payers was changed to better reflect the distribution of sources of payment among the acquisitions with consistent sources of payment. This change (1) reduced Medicare payments and increased private payments among Medicare beneficiaries, and (2) reduced out-of-pocket payments and increased Medicaid payments among Medicaid enrollees. In addition, Medicare, Medicaid, and private drug expenditures better benchmark totals in the National Health Expenditure Accounts.

Also beginning with the 2011 data, many aspects of the specifications were modified so that imputations and edits better reflect Medicare Part D donut hole rules and Medicare Part B coverage of a few medications and diabetic supplies. Discounts on brand name drugs in the

donut hole do not count towards total expenditures and are not included in source of payment variables.

For more information on the MEPS Prescribed Medicines editing and imputation procedures, please see Abdus et al., 2024, Methodology Report.

4.1 Rounding

Expenditure variables on the 2022 PMED PUF have been rounded to the nearest penny. Person-level expenditure variables released on the 2022 Consolidated PUF were rounded to the nearest dollar. It should be noted that using the 2022 MEPS event PUFs to create person-level totals will yield slightly different totals than those found on the 2022 Consolidated PUF. These differences are due to rounding only. Moreover, in some instances, the number of persons having expenditures on the 2022 event PUFs for a particular source of payment may differ from the number of persons with expenditures on the 2022 Consolidated PUF for that source of payment. This difference is also an artifact of rounding only.

4.2 Edited/Imputed Expenditure Variables (RXSF22X-RXXP22X)

There are 11 expenditure variables included in this event PUF. These expenditures have gone through an editing and imputation process and have been rounded to the second decimal place. There is a sum of payments variable (RXXP22X) which, for each prescribed medicine event, sums all the expenditures from the various sources of payment. The 10 sources of payment expenditure variables for each prescribed medicine event are the following: amount paid by self or family (RXSF22X), amount paid by Medicare (RXMR22X), amount paid by Medicaid (RXMD22X), amount paid by private insurance (RXPV22X), amount paid by the Veterans Administration/CHAMPVA (RXVA22X), amount paid by TRICARE (RXTR22X), amount paid by other federal sources (RXOF22X), amount paid by state and local (non-federal) government sources (RXSL22X), amount paid by Worker's Compensation (RXWC22X), and amount paid by some other source of insurance (RXOT22X). Please see Section 2.6.4 for details on all sources of payment variables.

5.0 Strategies for Estimation

5.1 Developing Event-Level Estimates

The data in this PUF can be used to develop national 2022 event-level estimates for the U.S. civilian noninstitutionalized population on prescribed medicine purchases (events) as well as expenditures, and sources of payment for these purchases. Estimates of total number of purchases are the sum of the weight variable (PERWT22F) across relevant event records while estimates of other variables must be weighted by PERWT22F to be nationally representative. The tables below contain event-level estimates for selected variables.

Table 4

Selected Event (Purchase) Level Estimates - All Prescribed Medicine Purchases

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT22F	2938.1 (108.73)
Mean total payments per purchase	RXXP22X	189 (10.3)
Mean out-of-pocket payment per purchase	RXSF22X	14 (0.5)
Mean proportion of expenditures paid by private insurance per purchase	RXPV22X /RXXP22X	0.158 (0.0045)

Table 5

Example by Drug Type: Statins (TC1S1_1 = 173 or TC1S1_2 = 173 or TC1S2_1 = 173 or TC1S3_1 = 173 or TC2S1_1 = 173 or TC2S1_2 = 173)

Estimate of Interest	Variable Name	Estimate (SE)
Number of purchases (in millions)	PERWT22F	195.5 (8.17)
Mean total payments per purchase	RXXP22X	24 (0.9)
Mean annual total payments per person	RXXP22X (aggregated across purchases within person)	95 (3.9)

5.2 Person-Based Estimates for Prescribed Medicine Purchases

To enhance analyses of prescribed medicine purchases, analysts may link information about prescribed medicine purchases to the annual Full Year Consolidated PUF (which has data for all MEPS sample persons), or conversely, link person-level information from the Full Year Consolidated PUF to this event-level file (see Section 6 below for more details). Both this file and the Full Year Consolidated PUF may be used to derive estimates for persons with prescribed medicine purchases and annual estimates of total expenditures for these purchases. However, for estimates that pertain to those who did not have prescribed medicine purchases as well as those who did (for example, the percentage of adults with at least one prescribed medicine purchase during the past year or the mean number of prescribed medicine purchases in the past year among those 65 or older), this PUF cannot be used. Only those persons with at least one

prescribed medicine purchase are represented in this PUF. The Full Year Consolidated PUF must be used for person-level analyses that include both persons with and without prescribed medicine events.

5.3 Variables with Missing Values

It is essential that the analyst examine all variables for the presence of negative values used to represent missing values. For continuous or discrete variables, where means or totals may be estimated, it may be necessary to set negative values to values appropriate to the analytic needs. That is, the analyst should either impute a value or set the value to one that will be interpreted as missing by the software package used. For categorical and dichotomous variables, the analyst may want to consider whether to recode or impute a value for cases with negative values or whether to exclude or include such cases in the numerator and/or denominator when calculating proportions.

Methodologies used for the editing/imputation of expenditure variables (e.g., total expenditures and sources of payment) are described in Section 4.2.

5.4 Variance Estimation (VARSTR, VARPSU)

To obtain estimates of variability in the MEPS estimates (such as the standard error of sample estimates or corresponding confidence intervals), analysts should take into account the complex sample design of the MEPS for both person-level and family-level analyses. Several methodologies have been developed for estimating standard errors for surveys with a complex sample design, including the Taylor-series linearization method, balanced repeated replication (BRR), and jackknife replication. Various software packages provide analysts with the capability of implementing these methodologies. MEPS analysts most commonly use the Taylor series approach. Although this PUF does not contain replicate weights, analysts can use the BRR methodology to construct replicate weights to develop variances for more complex estimators (see Section 5.4.2).

5.4.1 Taylor-series Linearization Method

The variables needed to calculate appropriate standard errors based on the Taylor-series linearization method are included on this and all other MEPS PUFs. Software packages that permit the use of the Taylor-series linearization method include SUDAAN, R, Stata, SAS (version 8.2 and higher), and SPSS (version 12.0 and higher). For complete information on the capabilities of a package, analysts should refer to the user documentation for the software.

With the Taylor-series linearization method, variance estimation strata and the variance estimation PSUs within these strata must be specified. The variables VARSTR and VARPSU on this PMED PUF identify the sampling strata and primary sampling units required by the variance estimation programs. Specifying a “with replacement” design in one of the previously mentioned software packages will provide estimated standard errors appropriate for assessing the variability of the MEPS estimates. It should be noted that the number of degrees of freedom associated with

estimates of variability indicated by such a package may not appropriately reflect the number available. For variables of interest distributed throughout the country (and thus the MEPS sample PSUs), one can generally expect to see at least 100 degrees of freedom associated with the estimated standard errors for national estimates based on this MEPS database.

Before 2002, the MEPS variance strata and PSUs were developed independently from year to year, and the last two characters of the strata and PSU variable names denoted the year. Beginning with the 2002 point-in-time PUF, the approach changed with the intention that variance strata and PSUs would be developed to be compatible with all future PUFs until the NHIS design changed. Thus, when pooling data across years 2002 through Panel 11 of the 2007 files, analysts can use the variance strata and PSU variables provided without modifying them for variance estimation purposes for estimates covering multiple years of data. There are 203 variance estimation strata, each stratum with either two or three variance estimation PSUs.

Beginning in Panel 12 of the 2007 files, a new set of variance strata and PSUs was developed because of the introduction of a new NHIS design. There are 165 variance strata with either two or three variance estimation PSUs per stratum. Therefore, there are a total of 368 (203+165) variance strata in the 2007 Population Characteristics PUF, as it consisted of two panels that were selected under two independent NHIS sample designs. Since both MEPS panels in the full-year files from 2008 through 2016 are based on the same NHIS design, there are only 165 variance strata. These strata (VARSTR values) have been numbered from 1001 to 1165 so that they can be readily distinguished from those developed under the former NHIS sample design if data are pooled for several years.

The NHIS sample design was changed again in 2016, effectively changing the MEPS design beginning with calendar year 2017. Beginning in Panel 22 of the 2017 files, a new set of variance strata and PSUs were developed. There are 117 variance strata with either two or three variance estimation PSUs per stratum. Therefore, there are a total of 282 (165+117) variance strata in the 2017 Population Characteristics PUF, as it consisted of two panels that were selected under two independent NHIS sample designs. To make the pooling of data across multiple years of the MEPS more straightforward, the numbering system for the variance strata was changed. The strata associated with the new design are numbered from 2001 to 2117.

The NHIS sample design was further modified in 2018, so the MEPS variance structure for the 2019 Population Characteristics PUF was also modified, reducing the number of variance strata to 105. Consistency was maintained with the prior structure in that the 2019 variance strata were also numbered within the range of values from 2001-2117, although there are now gaps in the values assigned within this range. Because of the modification, each stratum could contain up to 5 variance estimation PSUs.

For Panel 26 in the 2021 and 2022 Population Characteristics PUF, an additional NHIS sample was used for the MEPS to account for increasing nonresponse during the pandemic (as discussed in Section 3.1). The additional sample was assigned to the existing variance strata, so the Population Characteristics PUF continues to have 105 variance strata, numbered 2001-2117, with a few gaps in the values in that range. In many cases, the additional sample was assigned to new variance estimation PSUs; thus, in the Population Characteristics PUF, each stratum contains up to eight variance estimation PSUs.

Some analysts may be interested in pooling data across multiple years of MEPS data. When doing so, analysts should note that, to obtain appropriate standard errors, it is necessary to specify a common variance structure. Before 2002, each annual PUF was released with a variance structure unique to the particular MEPS sample in that year. Starting in 2002, the annual PUFs were released with a common variance structure that allowed analysts to pool data from 2002 through 2018. However, analysts can no longer do this routinely because the variance structure had to be modified beginning with 2019.

To ensure that variance strata are identified appropriately for variance estimation purposes when pooling MEPS data across several years, analysts can proceed as follows:

1. When pooling any year from 2002 through 2018, use the variance strata numbering as is.

2. When pooling (a) any year from 1996 to 2001 with any year from 2002 or later, or (b) the year 2019 and beyond with any earlier year, use the pooled linkage PUF HC-036,which contains the proper variance structure. The HC-036 file is updated every year so that appropriate variance structures are available with pooled data. Further details on the HC-036 file are included in the public use documentation of the HC-036 file.

5.4.2 Balanced Repeated Replication Method

BRR replicate weights are not provided on this MEPS PUF for the purposes of variance estimation. However, a file containing a BRR replication structure is made available so that analysts can form replicate weights, if desired, from the final MEPS weight to compute variances of MEPS estimates using either BRR or Fay's modified BRR (Fay, 1989) methods. The replicate weights are useful for computing variances of complex nonlinear estimators for which a Taylor linear form is neither easy to derive nor available in commonly used software. For instance, it is not possible to calculate the variances of a median or the ratio of two medians by using the Taylor linearization method. For these types of estimators, analysts can calculate a variance using BRR or Fay's modified BRR methods. However, it should be noted that the replicate weights have been derived from the final weight through a shortcut approach. Specifically, the replicate weights are not computed starting with the base weight, and all adjustments made in different stages of weighting are not applied independently in each replicate. Thus, the variances computed by using this one-step BRR do not capture the effects of all weighting adjustments that would be captured in a set of fully developed BRR replicate weights. The Taylor series approach does not fully capture the effects of the different weighting adjustments either.

The dataset HC-036BRR, MEPS 1996-2021 Replicates for Variance Estimation File, contains the information necessary to construct the BRR replicates. It includes a set of 128 flags (BRR1-BRR128) in the form of half sample indicators, each of which is coded 0 or 1 to indicate whether the person should or should not be included in that particular replicate. These flags can be used in conjunction with the full-year weight to construct the BRR replicate weights. For an analysis of MEPS data pooled across years, the BRR replicates can be formed in the same way by using the HC-036, MEPS 1996-2021 Pooled Linkage Variance Estimation File. For more information

about creating BRR replicates, analysts can refer to the documentation for the HC-036BRR pooled linkage file on the AHRQ website.

6.0 Merging/Linking MEPS Data Files

Data from this PUF can be used alone or in conjunction with other PUFs for different analytic purposes. Merging characteristics of interest from other MEPS PUFs expands the scope of potential estimates. For example, the medical event PUFs can be merged with the person-level Consolidated PUF to calculate event-level estimates for persons with specific characteristics (e.g., age, race, sex, and education).

Most of the event PUFs can also be linked to the Medical Conditions PUF by using the condition-event link (CLNK) PUF. When using the CLNK PUF, analysts should keep in mind that (1) conditions are household reported, (2) there may be multiple conditions associated with a medical event, (3) one condition may link to more than one event and (4) not all medical events link to the Medical Conditions PUF.

In addition to linking to other MEPS PUFs, each MEPS panel can also be linked back to the previous year's NHIS public use data files. For information on obtaining MEPS/NHIS link files please see the data files section of the MEPS website.

6.1 Linking to the Medical Conditions PUF

The condition-event link PUF (CLNK) provides a link from MEPS event PUFs to the 2022 Medical Conditions PUF. When using the CLNK PUF, analysts should keep in mind that (1) conditions are self-reported, (2) there may be multiple conditions associated with a prescribed medicine purchase, and (3) a condition may link to more than one prescribed medicine purchase or any other type of purchase. Analysts should also note that not all prescribed medicine purchases link to the Medical Conditions PUF.

6.2 Longitudinal Analysis

Panel-specific longitudinal files can be downloaded from the data section of the MEPS website. For all three panels (Panel 24, Panel 26, and Panel 27), the longitudinal file comprises MEPS data obtained in all rounds of the panel and can be used to analyze changes over the entire length of the panel. Variables in the file pertaining to survey administration, demographics, employment, health status, disability days, quality of care, patient satisfaction, health insurance, and medical care use and expenditures were obtained from the MEPS Consolidated PUFs from the years covered by that panel.

For more details or to download the data files, please see Longitudinal Weight Files on the MEPS website.

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D. Variable-Source Crosswalk

FOR MEPS HC 239A: 2022 Prescribed Medicines Events

Survey Administration Variables

Variable	Description	Source
DUID	Panel # + encrypted DU identifier	Assigned in sampling
PID	Person number	Assigned in sampling
DUPERSID	Sample person ID (DUID + PID)	Assigned in sampling
RXRECIDX	Record ID - Unique Prescribed Medicine Identifier	Constructed
LINKIDX	Link to condition and other event files	CAPI derived
DRUGIDX	Link to drugs across rounds	CAPI derived
PANEL	Panel indicator	Assigned in sampling
PURCHRD	Round in which the Rx/prescribed medicine was obtained/purchased	CAPI derived

Prescribed Medicines Events Variables

Variable	Description	Source
RXBEGMM	Month person first used medicine	PM130_02
RXBEGYRX	Year person first used medicine	PM130_01
RXNAME	Medicine name (Imputed)	Imputed
RXDRGNAM	Multum medicine name (Imputed)	Imputed
RXNDC	NDC (Imputed)	Imputed
RXQUANTY	Quantity of Rx/prescribed medicine (Imputed)	Imputed
RXFORM	Dosage form (Imputed)	Imputed
RXFRMUNT	Quantity unit of medication (Imputed)	Imputed
RXSTRENG	Strength of medication (Imputed)	Imputed
RXSTRUNT	Unit of medication (Imputed)	Imputed
RXDAYSUP	Days supplied of prescribed med(Imputed)	Imputed
PHARTP1-PHARTP11	Type of pharmacy prov - (1st-11th)	PM160LU

Variable	Description	Source
RXFLG	Flag variable indicating imputation source for NDC on pharmacy donor record	Constructed
IMPFLAG	Method of expenditure data creation	Constructed
PCIMPFLG	Flag indicating type of household to pharmacy prescription match	Constructed
DiabEquip	Other diabetic equipment or supplies	PM40
INPCFLG	Flag indicating if the person has at least one record in the pharmacy component	Constructed
TC1	Multum therapeutic class #1	Cerner Multum, Inc.
TC1S1	Multum therapeutic sub-class #1 for TC1	Cerner Multum, Inc.
TC1S1_1	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S1_2	Multum therapeutic sub-sub-class for TC1S1	Cerner Multum, Inc.
TC1S2	Multum therapeutic sub-class #2 for TC1	Cerner Multum, Inc.
TC1S2_1	Multum therapeutic sub-sub-class for TC1S2	Cerner Multum, Inc.
TC1S3	Multum therapeutic sub-class #3 for TC1	Cerner Multum, Inc.
TC1S3_1	Multum therapeutic sub-sub-class for TC1S3	Cerner Multum, Inc.
TC2	Multum therapeutic class #2	Cerner Multum, Inc.
TC2S1	Multum therapeutic sub-class #1 for TC2	Cerner Multum, Inc.
TC2S1_1	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S1_2	Multum therapeutic sub-sub-class for TC2S1	Cerner Multum, Inc.
TC2S2	Multum therapeutic sub-class #2 for TC2	Cerner Multum, Inc.
TC3	Multum therapeutic class #3	Cerner Multum, Inc.
TC3S1	Multum therapeutic sub-class #1 for TC3	Cerner Multum, Inc.
TC3S1_1	Multum therapeutic sub-sub-class for TC3S1	Cerner Multum, Inc.
RXSF22X	Amount paid, self or family (Imputed)	Edited/Imputed
RXMR22X	Amount paid, Medicare (Imputed)	Edited/Imputed
RXMD22X	Amount paid, Medicaid (Imputed)	Edited/Imputed
RXPV22X	Amount paid, private insurance (Imputed)	Edited/Imputed
RXVA22X	Amount paid, Veteran's Administration/CHAMPVA (Imputed)	Edited/Imputed
RXTR22X	Amount paid, TRICARE (Imputed)	Edited/Imputed
RXOF22X	Amount paid, other Federal (Imputed)	Edited/Imputed
RXSL22X	Amount paid, state and local government (Imputed)	Edited/Imputed

Variable	Description	Source
RXWC22X	Amount paid, Worker's Compensation (Imputed)	Edited/Imputed
RXOT22X	Amount paid, other insurance (Imputed)	Edited/Imputed
RXXP22X	Sum of payments RXSF22X - RXOU22X (Imputed)	Edited/Imputed

Weights

Variable	Description	Source
PERWT22F	Final person-level weight	Constructed
VARSTR	Variance estimation stratum, 2022	Constructed
VARPSU	Variance estimation PSU, 2022	Constructed

Appendix 1
Definitions for RXFORM, Dosage Form

Definitions for RXFORM, Dosage Form

Dosage Form	Definition
-7	refused
-8	don't know
-15	cannot be computed
ACC	accessory
ACETONIDE	acetonide
ACT	actuation
ADR	acetic acid drop
AE	aerosol
AEPB	aerosol powder, breath activated
AER	aerosol
AER SPRAY	aerosol spray
AERA	aerosol with adapter
AERB	aerosol, breath activated
AERO	aerosol
AEROP	aerosol powder
AEROSOL	aerosol
AERS	aerosol, solution
ALM	*
AMI	*
AMO	*
AMP	ampule
ARA	aerosol liquid w/adapter (inhaler)
ARD	aerosol solid w/adapter
ARO	aerosol solid
ASS	*
AUIJ	*
AUTO INJ	auto-injection

Dosage Form	Definition
BACK SUPPORT BELT	back support belt
BAG	bag
BAL	balm
BALM	balm
BAN	bandage
BANDAGE	bandage
BAR	bar
BATTERY	battery
BENCH	bench
BLO	block
BOT	bottle
BOTTLE	bottle
BOX	box
BOXES	boxes
BRACE	brace
BRIEF	brief
BUT	butterfly
C	capsules, or cream (varies)
C12	12 hour extended-release capsule
C12A	*
C24	24 hour extended-release capsule
CA	capsule
CANE	cane
CAP	capsule, caplets
CAP-CAPLETS	caplets
CAP-CAPSULE	capsule
CAP DR	delayed-release capsule
CAP ER	extended-release capsule
CAP SA	slow-acting capsule
CAPLET	caplet
CAPLT	caplet
CAPS	capsules
CAPSULE	capsule
CAPSULE SA	slow-acting capsule

Dosage Form	Definition
CAT	catheter
CATHETER	catheter
CC	cubic centimeter
CER	capsule, extended-release tablet, extended-release
CHAMBER	chamber
CHER	*
CHEW	chewable tablet
CHEW TAB	chewable tablet
CHEW TABS	chewable tablets
CHEWABLE	chewable
CHW	chewable tablets
CLEANSER	cleanser
COLLAR	collar
COMBO	*
COMPOUND	compound
CON	condom
CONC	concentrate
CONDOM	condom
CONTAINER	container
COS	*
COTTON	cotton
CP12	capsule, extended-release, 12 hour
CP24	capsule, extended-release, 24 hour
CPCR	capsule, extended-release
CPDR	capsule, delayed release
CPEP	capsule, delayed release particles
CPSP	capsule sprinkle
CPSR	slow-release capsule
CR	cream
CRE	cream
CREA	cream
CREAM	cream
CRM	cream

Dosage Form	Definition
CRY	crystal
CRYS	crystals
CRYSTAL	crystal
CS24	*
CSDR	*
CTB	chewable tablets
CTG	cartridge
CURVE	curve
CUTTER	cutter
DEV	device
DEVI	device
DEVICE	device
DIA	diaper
DIAPER	diaper
DIAPHRAGM	diaphragm
DIHYDROCHLOR	dihydrochloride
DIPROPION	dipropionate
DIS	disk, or dermal infusion system
DISC	DISC
DISK	disk
DISKUS	diskus
DISPOSABLE	disposable
DOS PAK	dose pack
DPRH	diaphragm
DR	drop
DRC	delayed-release capsule
DRE	dressing
DRESSING	dressing
DRO	drop
DROP	drop
DROPS	drops
DROPS OPTH OTI	ophthalmic/otic drops
DROPS SUSP	drops suspension
DRP	drop

Dosage Form	Definition
DRPS	drops
DSK	disk
DSPK	tablets in a dose pack
DSPT	tablet, dispersible
DT	tablet, disintegrating
EAM	*
EAR DROP	ear drop
EAR DROPS	ear drops
EAR DRP	ear drop
EAR SUSP	ear suspension
EC TABS	enteric coated tablets
ECC	enteric coated capsules
ECO	*
ECT	enteric coated tablets
ELI	elixir
ELIX	elixir
ELIXER	elixir
ELIXIR	elixir
ELX	elixir
EMERGENCY KIT	emergency kit
EMO	emollient
EMU	emulsion
EMUL	emulsion
EMULSION	emulsion
ENE	enema
ENEM	enema
ENEMA	enema
ER	*
ERC	capsule, extended-release
ERSUS	suspension, extended-release
ERT	tablet, extended-release
ERTA	extended-release-tablets
ERTC	tablet, chewable, extended-release
ESI	*

Dosage Form	Definition
EST	*
ETA	*
EXHU	*
EXTN CAP	extended-release capsule
EXTRACT	extract
EYE DRO	eye drop
EYE DROP	eye drop
EYE DROPS	eye drops
EYE DRP	eye drop
EYE EMU	*
EYE OIN	eye ointment
EYE SO	eye solution
EYEDRO	eye drop
FIL	film
FILM	film
FILM ER	film, extended-release
FILMTAB	filmtab
FILMTABS	filmtabs
FLI	film
FLOWMETER	flowmeter
FOA	foam
FOAM	foam
GAU	gauze
GAUZE	gauze
GEF	effervescent granules
GEL	gel
GELC	*
GEL CAP	gel capsule
GELS	gel-forming solution
GER	granule, extended-release
GFS	gel-forming solution
GLOVE	glove
GRA	granules
GRAN	granules

Dosage Form	Definition
GRANULES	granules
GRAR	granules for reconstitution
GRR	grams
GTT	drops
GUL	*
GUM	gum
HFA	*
HOSE	medical hosiery
HU	capsule
HYDROBROMIDE	hydrobromide
ICR	control-release insert
IMPL	implant
IMPLANT	implant
IN	injectable
INH	inhalant, inhaler
INH-INHALANT	inhalant
INH-INHALER	inhaler
INHA	inhaler
INH AER	inhalant aerosol
INHAL	inhalant
INHAL SOL	inhalant solution
INHALER	inhaler
INHL	inhalant
INJ	injectable
INJECTION (S)	injection (s)
INSERT	insert
INST	insert
INSULIN	insulin
IPA	*
IUD	intrauterine devise
IV	intravenous
JEL	jelly
JELLY	jelly
KI	*

Dosage Form	Definition
KIT	kit
L	lotion
LAN	*
LANCET	lancet
LANCETS	lancets
LI	liquid
LINIMENT	liniment
LIP	*
LIQ	liquid
LIQD	liquid
LIQUID	liquid
LO	*
LOLLIPOP	lollipop
LOT	lotion
LOTION	lotion
LOTN	lotion
LOZ	lozenge
LOZENGE	lozenge
LOZG	lozenge
LPOP	lollipop
LQCR	liquid, extended-release
MALEATE	maleate
MASK	mask
MCG	microgram
MEQ	milliequivalent
METER	meter
MG	milligram
MIS	miscellaneous
MISC	miscellaneous
MIST	mist
MONITOR	monitor
MONOH	*
MOUTHWASH	mouthwash
NAS	nasal spray

Dosage Form	Definition
NASAL	nasal
NASAL INHALER	nasal inhaler
NASAL POCKET HL	nasal inhaler, pocket
NASAL SOLN	nasal solution
NASAL SPR	nasal spray
NASAL SPRAY	nasal spray
NDL	needle
NE	nebulizer
NEB	nebulizer
NEBU	nebulization solution
NEBULIZER	nebulizer
NEEDLE	needle
NEEDLES	needles
NHL	*
NMA	enema
NMO	nanomole, millimicromole
NOP	*
NOS	*
NOSE DROPS	nose drops
ODR	ophthalmic drop (ointment)
ODT	oral disintegrating tablet
OIL	oil
OIN	ointment
OINT	ointment
OINT TOP	topical ointment
OINTA	ointment with applicator
OINTMENT	ointment
OLN	*
OMB	*
ONT	ointment
OP	ophthalmic solution
OP DROPS	ophthalmic drops
OP SOL	ophthalmic solution
OPA	*

Dosage Form	Definition
OPH	ophthalmic
OPH S	ophthalmic solution or suspension
OPH SOL	ophthalmic solution
OPH SOLN	ophthalmic solution
OPHT SOL	ophthalmic solution
OPHTH DROP (S)	ophthalmic drops
OPHTH OINT	ophthalmic ointment
OPHTH SOLN	ophthalmic solution
OPT SLN	ophthalmic solution
OPT SOL	ophthalmic solution
OPTH	ophthalmic solution or suspension or ointment
OPTH S	ophthalmic solution or suspension
OPTH SLN	ophthalmic solution
OPTH SOL	ophthalmic solution
OPTH SUSP	ophthalmic suspension
OPTIC	optic
ORA	*
ORAL	oral
ORAL INHL	oral inhalant
ORAL INHALER	oral inhaler
ORAL PWD	oral powder
ORAL RINSE	oral rinse
ORAL SOL	oral solution
ORAL SUS	oral suspension
ORAL SUSP	oral suspension
ORM	*
OSE	*
OTHER	other
OTI	otic solution
OTIC	otic
OTIC SOL	otic solution
OTIC SOLN	otic solution
OTIC SUS	otic suspension

Dosage Form	Definition
OTIC SUSP	otic suspension
PA	tablet pack, pad or patch (varies)
PAC	pack
PACK	pack
PAD	pad
PADS	pads
PAK	pack
PAS	paste
PASTE	paste
PAT	patch
PATCH	patch
PATCHES	patches
PCH	patch
PDI	powder for injection
PDR	powder
PDS	powder for reconstitution
PEDIATRIC DROPS	pediatric drops
PEL	pellets
PEN	pen
PI1	powder for injection, 1 month
PI3	powder for injection, 3 months
PIH	powder for inhalation
PKG	package
PKT	packet
PLASTER	plaster
PLEDGETS	pledgets
PLLT	pellet
PNKT	*
PO-SYRUP	syrup by mouth (oral syrup)
POD	POD
POPSICLE	popsicle
POUCH	pouch
POW	powder
POWD	powder

Dosage Form	Definition
POWDER	powder
POWDER FOR SOLUTION	*
POWDER/SUSPENS	powder/suspension
PRO	prophylactic
PRSY	*
PSKT	*
PST	paste
PSTE	paste
PT24	patch, 24 hour
PT72	patch, 72 hour
PTCH	patch
PTTW	patch, biweekly
PTWK	patch, weekly
PULVULE	pulvule
PWD	powder
PWD F/SOL	powder for solution
PWDI	powder for injection
PWDIE	powder for injection, extended-release
PWDR	powder for reconstitution
PWDRD	powder for reconstitution, delayed-release
RAL	*
RCTL SUPP	rectal suppository
RECTAL CREAM	rectal cream
REDITABS	reditabs
REF	*
RIN	rinse
RING	ring
RINSE	rinse
RMO	*
ROLL	roll
RTL	*
S	syrup, suspension, solution (varies)

Dosage Form	Definition
SA CAPS	slow-acting capsules
SA TAB	slow-acting tablet
SA TABLETS	slow-acting tablets
SA TABS	slow-acting tablets
SAL	salve
SALIC	*
SCRUB	scrub
SE	*
SER	extended-release suspension
SET	set
SGL	soft b23gel cap
SHA	shampoo
SHAM	shampoo
SHAMPOO	shampoo
SHMP	shampoo
SHOE	shoe
SLT	sublingual tablet
SL TAB	sublingual tablet
SO	solution
SOA	soap
SOAJ	*
SOCT	*
SOL	solution
SOLG	gel forming solution
SOLN	solution
SOLR	solution, reconstituted
SOLUTION	solution
SOLU	solution
SOPN	*
SOSY	*
SOTJ	*
SP	spray
SPG	sponge
SPN	*

Dosage Form	Definition
SPONGE	sponge
SPR	spray
SPRAY	spray
SQU	*
SRER	*
SRN	syringe
ST	*
STA	*
STAT	immediately
STK	stick
STOCKING	stocking
STP	strip
STR	strip
STRIP	strip
STRIPS	strips
STRP	strip
SU	suspension, solution, suppository, powder, or granules for reconstitution (varies)
SUB	sublingual
SUBL	tablet, sublingual
SUBLINGUAL	sublingual
SUER	*
SUP	suppository
SUPN	*
SUPP	suppository
SUPPOSITORIES	suppositories
SUPPOSITORY	suppository
SUS	suspension
SUS/LIQ	suspension/liquid
SUSP	suspension
SUSPEN	suspension
SUSPENDED RELEASE CAPLET	suspended release caplet
SUSPENSION	suspension

Dosage Form	Definition
SUSR	suspension, reconstituted
SUSY	*
SWA	swab
SWAB	swab
SWABS	swabs
SYG	*
SYP	syrup
SYR	syrup
SYRG	syringe
SYRINGE	syringe
SYRP	syrup
SYRUP	syrup
T	tablet
T12	12 hour extended-release tablet
T12A	12 hour extended-release tablet
T24	24 hour extended-release tablet
T24A	24 hour extended-release tablet
TA	tablet
TAB	tablet
TAB CHEW	chewable tablet
TAB DR	delayed-release tablet
TAB EC	enteric coated tablet
TAB SL	slow-acting tablet
TAB SUBL	sublingual tablet
TABL	tablet
TABLET	tablet
TABLET CUTTER	tablet cutter
TABLET SPLITTER	tablet splitter
TABLETS	tablets
TABS	tablets
TAM	tampon
TAP	tape
TAPE	tape
TB	tablet

Dosage Form	Definition
TB12	tablet, extended-release 12 hour
TB24	tablet, extended-release 24 hour
TBCH	chewable tablet
TBCR	tablet, extended-release
TBDD	*
TBDP	tablet, dispersible
TBEC	tablet, delayed-release
TBED	*
TBEF	tablet effervescent
TBPK	*
TBS	tablets
TBSL	sublingual tablet
TBSO	tablet, soluble
TBSR	slow-release tablet
TC	tablet, chewable
TCP	tablet, coated particles
TDM	extended-release film
TDR	orally disintegrating tablets
TDS	transdermal system
TEF	effervescent tablet
TER	extended-release tablet
TERF	film, extended-release
TES	test
TEST	test
TEST STRIP	test strip
TEST STRIPS	test strips
TIN	tincture
TINC	tincture
TOP CREAM	topical cream
TOP OINT	topical ointment
TOP SOL	topical solution
TOP SOLN	topical solution
TOPICAL	topical
TOPICAL CREAM	topical cream

Dosage Form	Definition
TOPICAL GEL	topical gel
TOPICAL OINTMENT	topical ointment
TOPICAL SOLUTION	topical solution
TOPICAL-UNSPECIFIED	topical-unspecified
TRO	troche
TROC	troche
TROCHE	troche
TTB	time release tablet
TUB	tube
TUBE	tube
UNDERWEAR	underwear
UNIT DOSE	unit dose
UNT	unit
VAGINAL CREAM	vaginal cream
VAGINAL RING	*
VAPORIZER	vaporizer
VIA	vial
VIAL	vial
VIAL(S)	vial(s)
VIL	vial
WAB	*
WAF	wafer
WAFR	wafer
WALKER	walker
WASH	wash
WIPES	wipes
Z-PAK	z-pak

* No definition for the dosage form.

Appendix 2
Definitions for RXFRMUNT, Quantity Unit of Medication

Definitions for RXFRMUNT, Quantity Unit of Medication

Code	Description
-1	inapplicable
-7	refused
-8	don't know
-15	cannot be computed
ALCOHOL PADS	alcohol pads
BLISTERS	*
CAPLT	caplet
CAPS	capsule
CC	cubic centimeter
DEVICE	device
EA	each
G	gram
GELC	*
GM	gram
GR	gram
INH	inhaler
INHALERS	*
L	liter
LANCETS	lancets
LOZ	lozenge
MCL	microliter
MCM	micrometer
MCN	*
MG	milligram
ML	milliliter
MONITOR	monitor

Code	Description
NDL	*
OTHER	other
PA	*
PADS	pads
PEN NEEDLES	*
PT	*
SRN	*
SUP	*
SWABS	swabs
TEST STRIPS	test strips
TROCHES	troches
OZ	ounce
QT	quart
TAB	tablet

*** No description for the code.**

Appendix 3
Definitions for RXSTRUNT, Unit of Medication

Definitions for RXSTRUNT, Unit of Medication

Abbreviations, Codes and Symbols	Definition
-7	refused
-8	don't know
-15	cannot be computed
%	percent
%/OTHER	percent/other
09	compound
9HR	9hr
24HR	24hr
91	other specify
ACT	actuation
ACTIVATION	activation
ACTUATION	actuation
BLIST	blister
B CELL	b cell
CC	cubic centimeters
CM2	square centimeter
DAYS	days
DOSE	dose
DROP	drop
DRP	drop
EL	ELISA (enzyme linked immunosorbent assay)
G	gram
G/ML	gram/milliliter
GM	gram
GM/SCOOP	*

Abbreviations, Codes and Symbols	Definition
GR	grain
HR or HRS	hour, hours
INH	inhalation
IU	international unit
MCG	microgram
MCG/DOSE	microgram/dose
MCG/MCG/ACT	microgram/microgram/actuation
MCG/MCG/DOSE	microgram/microgram/dose
MEQ	milliequivalent
MEQ/ML	milliequivalent/milliliter
MG	milligram
MG/IU	milligram/international unit
MG/MG/ACT	*
MG/MG/ML	milligram/milligram/milliliter
MG/ML/MG/ML	milligram/milliliter/milligram/milliliter
MG/ML/ML	milligram/milliliter/milliliter
ML	milliliter
ML/ML	milliliter/milliliter
MM	millimeter
MMU	millimass units
MU	*
OTHER	other
OZ	ounce
PACKET	packet
PFU	plaque forming units
SPRAY	spray
SQ CM	square centimeter
U OR UNIT	units
U/ML/U/ML	units/milliliter/units/milliliter
UNT	unit
UT/ML	*
VIAL	vial

*** No definition for the abbreviations, codes and symbols.**

Appendix 4
Definitions of Therapeutic Class Code

Definitions of Therapeutic Class Code

Therapeutic Class Code	Definition
-15	cannot be computed
-1	inapplicable
1	anti-infectives
2	amebicides
3	anthelmintics
4	antifungals
5	antimalarial agents
6	antituberculosis agents
7	antiviral agents
8	carbapenems
9	cephalosporins
10	leprostatics
11	macrolide derivatives
12	miscellaneous antibiotics
13	penicillins
14	quinolones
15	sulfonamides
16	tetracyclines
17	urinary anti-infectives
18	aminoglycosides
19	antihyperlipidemic agents
20	antineoplastics
21	alkylating agents
22	antineoplastic antibiotics
23	antimetabolites
24	antineoplastic hormones
25	miscellaneous antineoplastics
26	mitotic inhibitors

Therapeutic Class Code	Definition
27	radiopharmaceuticals
28	biologicals
30	antitoxins and antivenins
31	bacterial vaccines
32	colony stimulating factors
33	immune globulins
34	in vivo diagnostic biologicals
36	recombinant human erythropoietins
37	toxoids
38	viral vaccines
39	miscellaneous biologicals
40	cardiovascular agents
41	agents for hypertensive emergencies
42	angiotensin converting enzyme inhibitors
43	antiadrenergic agents, peripherally acting
44	antiadrenergic agents, centrally acting
45	antianginal agents
46	antiarrhythmic agents
47	beta-adrenergic blocking agents
48	calcium channel blocking agents
49	diuretics
50	inotropic agents
51	miscellaneous cardiovascular agents
52	peripheral vasodilators
53	vasodilators
54	vasopressors
55	antihypertensive combinations
56	angiotensin II inhibitors
57	central nervous system agents
58	analgesics
59	miscellaneous analgesics
60	narcotic analgesics
61	nonsteroidal anti-inflammatory agents
62	salicylates
63	analgesic combinations
64	anticonvulsants

Therapeutic Class Code	Definition
65	antiemetic/antivertigo agents
66	antiparkinson agents
67	anxiolytics, sedatives, and hypnotics
68	barbiturates
69	benzodiazepines
70	miscellaneous anxiolytics, sedatives and hypnotics
71	CNS stimulants
72	general anesthetics
73	muscle relaxants
74	neuromuscular blocking agents
76	miscellaneous antidepressants
77	miscellaneous antipsychotic agents
79	psychotherapeutic combinations
80	miscellaneous central nervous system agents
81	coagulation modifiers
82	anticoagulants
83	antiplatelet agents
84	heparin antagonists
85	miscellaneous coagulation modifiers
86	thrombolytics
87	gastrointestinal agents
88	antacids
89	anticholinergics/antispasmodics
90	antidiarrheals
91	digestive enzymes
92	gallstone solubilizing agents
93	GI stimulants
94	H2 antagonists
95	laxatives
96	miscellaneous GI agents
97	hormones/hormone modifiers
98	adrenal cortical steroids
99	antidiabetic agents
100	miscellaneous hormones
101	sex hormones
102	contraceptives

Therapeutic Class Code	Definition
103	thyroid hormones
104	immunosuppressive agents
105	miscellaneous agents
106	antidotes
107	chelating agents
108	cholinergic muscle stimulants
109	local injectable anesthetics
110	miscellaneous uncategorized agents
111	psoralens
112	radiocontrast agents
113	genitourinary tract agents
114	illicit (street) drugs
115	nutritional products
116	iron products
117	minerals and electrolytes
118	oral nutritional supplements
119	vitamins
120	vitamin and mineral combinations
121	intravenous nutritional products
122	respiratory agents
123	antihistamines
124	antitussives
125	bronchodilators
126	methylxanthines
127	decongestants
128	expectorants
129	miscellaneous respiratory agents
130	respiratory inhalant products
131	antiasthmatic combinations
132	upper respiratory combinations
133	topical agents
134	anorectal preparations
135	antiseptic and germicides
136	dermatological agents
137	topical anti-infectives
138	topical steroids

Therapeutic Class Code	Definition
139	topical anesthetics
140	miscellaneous topical agents
141	topical steroids with anti-infectives
143	topical acne agents
144	topical antipsoriatics
146	mouth and throat products
147	ophthalmic preparations
148	otic preparations
149	spermicides
150	sterile irrigating solutions
151	vaginal preparations
153	plasma expanders
154	loop diuretics
155	potassium-sparing diuretics
156	thiazide diuretics
157	carbonic anhydrase inhibitors
158	miscellaneous diuretics
159	first generation cephalosporins
160	second generation cephalosporins
161	third generation cephalosporins
162	fourth generation cephalosporins
163	ophthalmic anti-infectives
164	ophthalmic glaucoma agents
165	ophthalmic steroids
166	ophthalmic steroids with anti-infectives
167	ophthalmic anti-inflammatory agents
168	ophthalmic lubricants and irrigations
169	miscellaneous ophthalmic agents
170	otic anti-infectives
171	otic steroids with anti-infectives
172	miscellaneous otic agents
173	HMG-CoA reductase inhibitors
174	miscellaneous antihyperlipidemic agents
175	protease inhibitors
176	NRTIs
177	miscellaneous antivirals

Therapeutic Class Code	Definition
178	skeletal muscle relaxants
179	skeletal muscle relaxant combinations
180	adrenergic bronchodilators
181	bronchodilator combinations
182	androgens and anabolic steroids
183	estrogens
184	gonadotropins
185	progestins
186	sex hormone combinations
187	miscellaneous sex hormones
191	narcotic analgesic combinations
192	antirheumatics
193	antimigraine agents
194	antigout agents
195	5HT3 receptor antagonists
196	phenothiazine antiemetics
197	anticholinergic antiemetics
198	miscellaneous antiemetics
199	hydantoin anticonvulsants
200	succinimide anticonvulsants
201	barbiturate anticonvulsants
202	oxazolidinedione anticonvulsants
203	benzodiazepine anticonvulsants
204	miscellaneous anticonvulsants
205	anticholinergic antiparkinson agents
206	miscellaneous antiparkinson agents
208	SSRI antidepressants
209	tricyclic antidepressants
210	phenothiazine antipsychotics
211	platelet aggregation inhibitors
212	glycoprotein platelet inhibitors
213	sulfonylureas
214	biguanides
215	insulin
216	alpha-glucosidase inhibitors
217	bisphosphonates

Therapeutic Class Code	Definition
218	alternative medicines
219	nutraceutical products
220	herbal products
222	penicillinase resistant penicillins
223	antipseudomonal penicillins
224	aminopenicillins
225	beta-lactamase inhibitors
226	natural penicillins
227	NNRTIs
228	adamantane antivirals
229	purine nucleosides
230	aminosalicylates
231	nicotinic acid derivatives
232	rifamycin derivatives
233	streptomyces derivatives
234	miscellaneous antituberculosis agents
235	polyenes
236	azole antifungals
237	miscellaneous antifungals
238	antimalarial quinolines
239	miscellaneous antimalarials
240	lincomycin derivatives
241	fibric acid derivatives
242	psychotherapeutic agents
243	leukotriene modifiers
244	nasal lubricants and irrigations
245	nasal steroids
246	nasal antihistamines and decongestants
247	nasal preparations
248	topical emollients
249	antidepressants
250	monoamine oxidase inhibitors
251	antipsychotics
252	bile acid sequestrants
253	anorexiants
254	immunologic agents

Therapeutic Class Code	Definition
256	interferons
257	immunosuppressive monoclonal antibodies
261	heparins
262	coumarins and indandiones
263	impotence agents
264	urinary antispasmodics
265	urinary pH modifiers
266	miscellaneous genitourinary tract agents
267	ophthalmic antihistamines and decongestants
268	vaginal anti-infectives
269	miscellaneous vaginal agents
270	antipsoriatics
271	thiazolidinediones
272	proton pump inhibitors
273	lung surfactants
274	cardioselective beta blockers
275	non-cardioselective beta blockers
276	dopaminergic antiparkinsonism agents
277	5-aminosalicylates
278	cox-2 inhibitors
279	gonadotropin-releasing hormone and analogs
280	thioxanthenes
281	neuraminidase inhibitors
282	meglitinides
283	thrombin inhibitors
284	viscosupplementation agents
285	factor Xa inhibitors
286	mydriatics
287	ophthalmic anesthetics
288	5-alpha-reductase inhibitors
289	antihyperuricemic agents
290	topical antibiotics
291	topical antivirals
292	topical antifungals
293	glucose elevating agents
295	growth hormones

Therapeutic Class Code	Definition
296	inhaled corticosteroids
297	mucolytics
298	mast cell stabilizers
299	anticholinergic bronchodilators
300	corticotropin
301	glucocorticoids
302	mineralocorticoids
303	agents for pulmonary hypertension
304	macrolides
305	ketolides
306	phenylpiperazine antidepressants
307	tetracyclic antidepressants
308	SSNRI antidepressants
309	miscellaneous antidiabetic agents
310	echinocandins
311	dibenzazepine anticonvulsants
312	cholinergic agonists
313	cholinesterase inhibitors
314	antidiabetic combinations
315	glycylcyclines
316	cholesterol absorption inhibitors
317	antihyperlipidemic combinations
318	insulin-like growth factor
319	vasopressin antagonists
320	smoking cessation agents
321	ophthalmic diagnostic agents
322	ophthalmic surgical agents
323	antineoplastic monoclonal antibodies
324	antineoplastic interferons
325	sclerosing agents
327	antiviral combinations
328	antimalarial combinations
329	antituberculosis combinations
330	antiviral interferons
331	radiologic agents
332	radiologic adjuncts

Therapeutic Class Code	Definition
333	miscellaneous iodinated contrast media
334	lymphatic staining agents
335	magnetic resonance imaging contrast media
336	non-iodinated contrast media
337	ultrasound contrast media
338	diagnostic radiopharmaceuticals
339	therapeutic radiopharmaceuticals
340	aldosterone receptor antagonists
341	atypical antipsychotics
342	renin inhibitors
343	tyrosine kinase inhibitors
344	nasal anti-infectives
345	fatty acid derivative anticonvulsants
346	gamma-aminobutyric acid reuptake inhibitors
347	gamma-aminobutyric acid analogs
348	triazine anticonvulsants
349	carbamate anticonvulsants
350	pyrrolidine anticonvulsants
351	carbonic anhydrase inhibitor anticonvulsants
352	urea anticonvulsants
353	anti-angiogenic ophthalmic agents
354	H. pylori eradication agents
355	functional bowel disorder agents
356	serotoninergic neuroenteric modulators
357	growth hormone receptor blockers
358	metabolic agents
359	peripherally acting antiobesity agents
360	lysosomal enzymes
361	miscellaneous metabolic agents
362	chloride channel activators
363	probiotics
364	antiviral chemokine receptor antagonist
365	medical gas
366	integrase strand transfer inhibitor
368	non-ionic iodinated contrast media
369	ionic iodinated contrast media

Therapeutic Class Code	Definition
370	otic steroids
371	dipeptidyl peptidase 4 inhibitors
372	amylin analogs
373	incretin mimetics
374	cardiac stressing agents
375	peripheral opioid receptor antagonists
376	radiologic conjugating agents
377	prolactin inhibitors
378	drugs used in alcohol dependence
379	next generation cephalosporins
380	topical debriding agents
381	topical depigmenting agents
382	topical antihistamines
383	antineoplastic detoxifying agents
384	platelet-stimulating agents
385	group I antiarrhythmics
386	group II antiarrhythmics
387	group III antiarrhythmics
388	group IV antiarrhythmics
389	group V antiarrhythmics
390	hematopoietic stem cell mobilizer
391	mTOR kinase inhibitors
392	otic anesthetics
393	cerumenolytics
394	topical astringents
395	topical keratolytics
396	prostaglandin D2 antagonists
397	multikinase inhibitors
398	BCR-ABL tyrosine kinase inhibitors
399	CD52 monoclonal antibodies
400	CD33 monoclonal antibodies
401	CD20 monoclonal antibodies
402	VEGF/VEGFR inhibitors
403	mTOR inhibitors
404	EGFR inhibitors
405	HER2 inhibitors

Therapeutic Class Code	Definition
406	glycopeptide antibiotics
407	inhaled anti-infectives
408	histone deacetylase inhibitors
409	bone resorption inhibitors
410	adrenal corticosteroid inhibitors
411	calcitonin
412	uterotonic agents
413	antigonadotropic agents
414	antidiuretic hormones
415	miscellaneous bone resorption inhibitors
416	somatostatin and somatostatin analogs
417	selective estrogen receptor modulators
418	parathyroid hormone and analogs
419	gonadotropin-releasing hormone antagonists
420	antiandrogens
422	antithyroid agents
423	aromatase inhibitors
424	estrogen receptor antagonists
426	synthetic ovulation stimulants
427	tocolytic agents
428	progesterone receptor modulators
429	trifunctional monoclonal antibodies
430	anticholinergic chronotropic agents
431	anti-CTLA-4 monoclonal antibodies
432	vaccine combinations
433	Catecholamines
435	selective phosphodiesterase-4 inhibitors
437	Immunostimulants
438	Interleukins
439	other immunostimulants
440	therapeutic vaccines
441	calcineurin inhibitors
442	TNF alfa inhibitors
443	interleukin inhibitors
444	selective immunosuppressants
445	other immunosuppressants

Therapeutic Class Code	Definition
446	neuronal potassium channel openers
447	CD30 monoclonal antibodies
448	topical non-steroidal anti-inflammatories
449	hedgehog pathway inhibitors
450	topical antineoplastics
451	topical photochemotherapeutics
452	CFTR potentiators
453	topical rubefacient
454	proteasome inhibitors
455	guanylate cyclase-c agonists
456	ampa receptor antagonists
457	hydrazide derivatives
458	sglt-2 inhibitors
459	urea cycle disorder agents
460	phosphate binders
461	topical anti-rosacea agents
462	allergenics
463	protease-activated receptor-1 antagonists
464	miscellaneous diagnostic dyes
465	diarylquinolines
466	bone morphogenetic proteins
467	ace inhibitors with thiazides
468	antiadrenergic agents (central) with thiazides
469	antiadrenergic agents (peripheral) with thiazides
470	miscellaneous antihypertensive combinations
472	beta blockers with thiazides
473	angiotensin II inhibitors with thiazides
474	beta blockers with calcium channel blockers
475	potassium sparing diuretics with thiazides
476	ace inhibitors with calcium channel blocking agents
479	angiotensin II inhibitors with calcium channel blockers
480	antiviral boosters
481	NK1 receptor antagonists
482	angiotensin receptor blockers and neprilysin inhibitors
483	neprilysin inhibitors
484	PCSK9 inhibitors

Therapeutic Class Code	Definition
485	NS5A inhibitors
486	oxazolidinone antibiotics
487	cftr combinations
488	anticoagulant reversal agents
489	CD38 monoclonal antibodies
490	peripheral opioid receptor mixed agonists/antagonists
491	local injectable anesthetics with corticosteroids
493	anti-PD-1 monoclonal antibodies
494	PARP inhibitors
495	Calcimimetics
496	VMAT2 inhibitors
497	cation exchange resins
498	antineoplastic combinations
499	carbapenems/beta-lactamase inhibitors
500	PI3K inhibitors
501	CDK 4/6 inhibitors
502	CGRP inhibitors
503	streptogramins
504	antimanic agents
505	transthyretin stabilizers
506	topical allergy diagnostic agents
507	malignancy photosensitizers
508	NHE3 inhibitors
509	BTK inhibitor
510	miscellaneous erythropoiesis agents
511	renal replacement solutions
512	melanocortin receptor agonists
513	investigational drugs
514	hereditary angiodema agents
515	peripheral opioid receptor agonists
516	noradrenergic uptake inhibitors for ADHD
517	CD19 monoclonal antibodies
518	other cephalosporins
519	alpha-adrenoreceptor antagonists